Narrative Report
Swan Lake National Wildlife Refuge
January - December, 1971

R+E MO.

United States Department of the Interior
Fish and Wildlife Service
Sumner, Missouri 64681

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PERMANENT PERSONNEL

Robert H. Timmerman ... Transferred 8/9/71	Refuge Manager
Alfred O. Manke ..... E.O.D. 8/9/71	Refuge Manager
Bennie M. Hull	Biological Technician
Benny N. Howerton	Med. Equipment Operator
Marvin F. Lentz	Refuge Clerk

TEMPORARY EMPLOYEES

Floyd A. Holland	Laborer
Roy T. Warren	Laborer
Ervin Windsor	Laborer

NEIGHBORHOOD YOUTH CORPS ENROLLEES

Mickey Kennison	Laborer
Jay Tietjens	Laborer

I. GENERAL

A. Weather Conditions

	Precipitation			Max.	Min.
	Month	Normal	Snowfall	Temp.	Temp.
January	2.10	1.64	4.5	53	-3
February	1.68	1.79	-	64	-5
March	.82	2.57	8.0	77	11
April	1.62	3.72	-	84	28
May	4.36	4.52	-	86	32
June	3.74	4.87	-	95	57
July	2.43	3.92	-	95	57
August	1.17	3.67	-	98	47
September	3.17	4.88	-	95	37
October	3.66	2.72	-	86	35
November	2.21	2.32	5.0	74	18
December	4.80	1.65	T	58	16
Annual Totals	31.76	38.27	17.5	Extremes 98	-5

Data as recorded at Fountain Grove located approximately eight miles north of refuge headquarters. Conditions at weather station and at refuge considered close enough to be acceptable without modifications.

A. Weather Conditions

Graciously favorable! Below normal precipitation facilitated field operations yet was sufficient to produce excellent crops. It permitted water levels of all three pools to be held desirably low yet was adequate to prevent fish kills. No major storms or floods occurred although flooding from four inches of rain in December did cause some damage. Three months of beautiful Indian summer was the frosting on the 1971 weather cake that was enjoyed by all.

B. Habitat Conditions

1. Water

Close adherence to planned water levels was maintained. This proved highly beneficial. Moist soil food crop production was excellent. Mud flats exposed late in the year attracted shore birds. Waterfowl seemed to find the shallower waters most attractive. Shoreline and dike erosion was reduced. The additional storage capacity provided some measure of insurance against moderate run offs flooding croplands.

Drawdown of Swan Lake began in mid-May, and the water-level reduced to the desired 654.0 elevation by mid-June. It was held at that level until early September when a gradual rise was initiated. Waterfowl use was the greatest it has ever been in the memories of long-term employees and residents. Many, many thousands of ducks and geese fed and loafed within easy view of thousands of visitors throughout October, November and December.

Silver Lake was held as close as possible to elevation 663.0, but varied between 661.6 and 665.6. During much of the summer and early fall, however, it remained rather constant at about 662.0. This exposed several hundred acres. That which was exposed early produced vegetation that attracted waterfowl. That which was exposed later provided mud flats that attracted shorebirds. Water from Silver Lake was used to maintain Swan Lake levels throughout most of July, August and September.

South Lake was held low as usual to produce moist soil food plants and be able to accept water from the other two lakes. Food production was excellent and rails and waterfowl responded accordingly.

Some fish trapped in borrow pits died in the shallow, hot water. An estimated loss of 500 pounds of rough fish occurred. Fish eaters concentrated at these areas making good use of the dead and dieing trapped fish. Trapping fish in these shallow ponds and ditches may be initiated as a management tool when and whereever possible to supply eagles and encourage year-round eagle habitation.

The majority of the weak and wounded geese seemed to die while sitting on the ice. As they died the eagles fed on the carcasses so the impounded water continued to provide wildlife habitat even after freezing.

2. Food and Cover

This was a near record year for food production and was none too much. In fact in terms of refuge objectives it could be labled inadequate.

Available grain for wildlife over the past 17 years has averaged about 44,000 bushels with as little as 11,500 in 1955 and as much as 101,000 in 1968. This years crops provided an estimated 85,000 bushels being third highest in the 17-year period. To provide for the 25,000,000 waterfowl use days set as an objective, however, some 100,000 bushels of grain should be available every year.

An excellent growth of wheat was produced on all 1,150 acres sown for browse. None of it was water-killed until December. It produced an estimated 350 tons of browse. Wheat acreage over the past 17 years has averaged about 950 acres, but has seldom produced the amount of browse that this years did.

But despite near record grain, browse and moist soil crops combining to make this one of the best food production years in the history of the refuge; that there was none too much, bears reiteration. Food still would have been in very short supply had it not been for off-refuge feeding. Early harvest by refuge neighbors was a "saving grace." If the flyway council's goal of sending 200,000 geese north is realized, it is going to be "hell to pay" even in good years let alone the bad.

Food and cover were considered adequate for other species except for deer during a high water period. A seemingly over population of deer was dispersed by a flood in December. At that time almost all timber and brush areas were flooded. Deer remaining on the refuge utilized corn fields for food and cover. Sorghum fields provided food and cover for quail throughout much of the year.

Native grasses sown in previous years seemed tall and dense enough to support prairie chickens. Every thing "looked good" except no sign of prairie chickens was found. But at least food and cover were deemed adequate for them. Some controlled burning will be attempted as an inducement to both native grasses and prairie chickens in the coming year.

In summary, available food and cover sustained refuge inhabitants, but could hardly be termed adequate. Fields and marshes appear completely gleaned. This condition forebodes troubled waters because food production was almost equal to the all time high, and few years are expected to be as near perfect as this one. No artificial feeding was done, but some 1,100 bushels of corn were used in banding operations.

II WILDLIFE

A. Migratory Birds

1. Waterfowl

Some 51,000 Canada geese on the refuge cackled in the year 1971. A peak of 70,000 occurred the last week of January. After that a gradual erosion of the flock set in decreasing it by 5,000 to 10,000 birds per week until about the first of April at which time only 3,000 remained. By the end of April all but the 200 summer residents had departed. Meanwhile blue and snow geese seesawed between the refuge and other areas beginning the last week of January. A peak of 15,000 occurred in mid-March and all were gone by the first of April. No white-fronted geese were seen.

A paucity of food and an unusally cold winter combined to reduce the wintering population of geese on the refuge. Counts in January and February recorded 100,000 geese in the zone, but only about half of these stationed themselves on the refuge. Spring migration seemed normal, but again the paucity of food may have been cause for migrant geese to pause but briefly.

A few Canada geese returned to the refuge September 11. The tempo of returnees picked up markedly September 17, 18 and 19. Thereafter the population just about doubled each week until 100,000 had returned by mid-October. The peak of 128,000 occurred in mid-November. At that time more than 30,000 blue and snow geese were also here. Unlike the hasty spring migration, more than 100,000 Canada geese and 10,000 to 20,000 blue and snow geese tarried through the end of the year. Only a few small Canadas and fewer white-fronted geese were seen, but many could have been overlooked because of the great number of common Canadas, blues and snows present.

An abundance of available food through December coupled with very beautiful and mild weather plus minimal goose harvests in Minnesota, Iowa and Missouri are credited for the high use and peak population.

Duck use during the spring migration consisted of a smattering of everything and not much of anything. The peak of 30,000 composed of 16 species occurred about April 1. The lack of a large buildup is attributed to an insufficient amount of food.

Autumn migration of ducks was just about the opposite. Migration into the area began rather early, and once the ducks found the refuge they seemed to stay with little inclination to move elsewhere. The most notable feature of the fall population was the mass movement of mallards onto the refuge in early December. An estimated 250,000 appeared on Silver Lake December 7. For the next two weeks they rested on the south end of the lake and fed almost exclusively in the adjoining 90 acres of flooded sorghum. Many "old timers" made comment that they had never seen anything like it. The estimated figure of

250,000 is probably very low. It could have been double that amount, but in comparison to previous years it is rather frightening to the estimater to state that there were a half-million mallards on Swan Lake Refuge. They consumed about 7,500 bushels of sorghum, and all but pushed the geese out of that particular area.

Waterfowl use days for the period of September through December are listed for the past 17 years in the following table.

Number of Days Use

Year	Canada Geese	Other Geese	Ducks	Coots	Totals
1955	4,692,100	170,100	7,691,500	90,800	12,644,500
1956	3,390,300	354,900	4,097,700	52,700	7,895,600
1957	2,449,000	36,300	4,289,300	32,450	6,807,050
1958	2,505,700	198,600	2,131,400	14,500	4,850,100
1959	3,364,825	468,489	4,363,621	373,800	8,570,735
1960	5,738,300	358,610	3,400,925	317,435	9,815,825
1961	4,546,580	428,953	4,393,500	85,750	9,454,783
1962	7,113,600	657,300	1,344,350	107,100	9,222,360
1963	8,831,375	969,920	4,677,750	230,300	14,709,345
1964	7,980,700	687,050	4,931,220	175,350	13,774,320
1965	9,122,400	831,180	5,845,560	321,440	16,120,580
1966	11,272,800	1,684,340	6,979,630	398,650	20,335,420
1967	9,774,800	1,578,570	5,792,395	444,500	17,590,265
1968	9,576,700	1,063,825	4,691,960	126,350	15,458,835
1969	6,962,200	547,470	3,948,980	229,110	11,687,760
1970	9,081,450	2,103,220	6,467,000	987,000	18,638,670
1971	9,671,900	1,457,400	9,034,900	297,514	20,461,714

Waterfowl use days for 1971 versus Refuge Objectives is shown below.

	Geese	Ducks	Waterfowl Use Days
Objective	16,880,000	7,530,000	24,410,000
1971 Totals	15,667,540	9,766,470	25,434,010
Difference -	-1,212,460	+2,236,470	+1,024,010

3. Coots

Use days and the peak population of coots returned to about normal numbers after last years double record number. Conditions for another record breaker seemed favorable with everything here but the coots.

Other Waterbirds

The first great blue heron observation occurred March 24. A population of about 35 birds inhabited the refuge throughout the summer. A peak of about 100 birds occurred late in August, and at least three were still here at the end of the year.

White pelicans were not far behind the herons. Twenty were seen March 27, and the spring population peaked at 1,500 birds shortly thereafter. Three returned August 5. The fall population peaked at 3,000, and two somewhat bedraggled specimens remained until December 7.

A few double-crested cormorants found the refuge in the spring and again in the fall. One cattle egret visited the refuge in the spring with ten more sighted a few miles off the refuge. This is only the second year a cattle egret has been seen on the refuge. Sora rails could be heard "gurgling" in the dense vegetation of the south pool, but no reasonable count was obtained. They were here and it sounded like a whole bunch, but no reliable data were gathered. One immature little blue heron seemed lost as it was observed for a few days in October near dike No. 4.

Upwards of 50 pied-billed grebes completes the water and marsh bird story for the year.

Shorebirds, Gulls, and Terns

Populations and species content within this broad grouping are described as normal with one noteable exception. Two avocets plied their trade on the mud flats of Silver Lake from September 24, through October 30. Their energetic activities were greatly appreciated by bird watchers. When first seen there was some question as to their identity because of the lack of tan coloration on head and neck. Further observation of their actions, size and markings, however, left no doubt as to their being avocets.

Doves

Harvested fields off the refuge provided a bonanza for the doves, but also tended to discourage concentrations. There were plenty of doves in the area, but not an over abundance on the refuge. Good habitat on the refuge is not plentiful, but the population of the area places enough pressure on doves that they are forced to utilize every available nook and cranny. The peak population was estimated to be 2,500. No production figures were tallied for the refuge, but it is believed to be quite high despite the paucity of habitat.

B. Upland Game Birds

There is good bobwhite quail habitat on the refuge during dry periods, but not much when it's wet. This was a dry year and many nice coveys were seen and heard on and off the refuge. Because of continued favorable weather conditions, survival through the winter is expected to be unusually high. Consequently, barring a catastrophic nesting season, quail should be abundant again in the coming year.

Not a pheasant was seen on the refuge. This is disheartening. Pheasants would be a most welcome addition to the refuge. A few are

seen each year within a few miles of the refuge, so there is still hope.

Perhaps an even greater disappointment than the pheasants, is the lack of prairie chickens. The refuge is well within prairie chicken range, and over the past several years quite a lot of work has been done to reestablish them including release of 19 birds February 27. But as of the end of the year, the future of these birds seems rather dismal. Hope springs eternal, however, and a redoubling of efforts will be made to bring the prairie chicken back to the refuge.

C. Big Game Animals

As related earlier, there was some concern about an over population of deer on the refuge. Throughout the fall, 50 to 100 deer could be seen in an hours drive around the refuge. Although all the deer appeared to be in excellent condition, there just seemed to be too many for the amount of habitat on the refuge. A flood in December did much to allay fears that the refuge may be a closed range with an over population. Although many returned as waters receded, it proved that the herd will be dispersed periodically. A study is currently being conducted to determine the amount and extent of this dispersion with and without duress. About 500 white-tailed deer is the big game population on the refuge.

D. Fur Animals, Predators, Rodents and Other Mammals

Few fur animals inhabit the refuge. Certainly the most noticeable and those that probably exert the most impact on the refuge are the beaver. Their numbers and activities are at a point of becoming a nuisance, and they seem to be expanding their sphere of operations. In contrast, raccoon sightings and sign are at an acceptable minimum. Circumstantial evidence points to even fewer muskrats than raccoon. Only two houses were within view from the tour-route. Although these provided the visual aid necessary to explain the muskrats part in the ecology of a marsh, a larger population seems desirable.

There is a saying in these parts that "as the coyotes increase, the foxes decrease." There may be more truth than poetry in it. This is the second year in a row that not one fox was seen, and coyote sightings are frequent. One morning Biological Technician Hull saw nine coyotes in the eight-mile drive between his residence and headquarters. Because of their far ranging habits and wonderlust, no population estimate is made for the refuge. No adverse affects from predation are apparent.

Cottontail rabbits, grey squirrels and fox squirrels abound whereever suitable habitat exists. Since corn is much more plentiful than acorns and nuts, it appears to be the staple food item of the squirrels. Many barren corn cobs litter the fringes of woods at distances of more than a quarter of a mile from any corn fields.

E. Hawks, Eagles, Owls and Crows

Migrant hawks and eagles began arriving in October, increasing to an extremely large population. A conservative estimate had 60 eagles on the refuge in December, and hawks out numbered eagles by about 5 to 1. Although hawks were seen to take several rabbits, and the geese and ducks were harrassed by both eagles and hawks, their predatorial pressure was thought to be well within toleration limits. Dead and dieing geese provided the bulk of their food, and with some 150,000 geese on the refuge they did not want, nor were the geese missed. The "eagle patrol" caused some annoyance during banding operations. It seemed that just about every time the net was about to be cast, the geese were "spooked" by eagles.

Owls continue to be heard and seen quite regularly and frequently signifying a healthy population. No noticeable adverse affects can be attributed to them, so the present population is a welcome part of the refuge community.

A small population of crows reside year-around on the refuge. Few migrants visited or even came close to the refuge. Perhaps the time of the crow is also past. Those that are here have caused no significant amount of damage. A few were seen argueing with the eagles over possession of goose carcasses, but this was much more of a nuisance than strife factor.

F. Other Birds

The only species noted that is not included on the bird list is avocet. The bird list is past due for updating and form revision. By the time a new list is compiled and format ready for the printers, we will probably know whether the avocet should be added as a regular or accidental species.

G. Fish

Rough fish, primarily carp, trapped and died in shallow borrow pits amounted to an estimated 500 pounds. Low water levels, particularly in Silver Lake, was cause for concern that there would be a winter-kill of fish. Rains and run-off in December prior to the lakes freezing relieved this situation and no winter-kill was noted. Fishing and fishing success may possibly have been increased by concentrating the fish within a somewhat smaller area than in years of higher lake levels and floods. By the same token, lack of floods prevented further natural stocking, and no other fish stocking was employed. A three day seining season was held July 8-10, resulting in the removal of about 11 tons of rough fish.

H. Reptiles

No significant data or noteworthy changes to report.

I. Disease

Circumstantial evidence indicates little or no mortality from disease. Although goose carcasses were rather common, carcasses were not concentrated or abundant enough to suggest anything but normal mortality. Consequently no investigative actions were initiated, and no specific diseases or causitive factors can be reported.

J. Rare and Endangered Species

Although within the designated range for Southern Bald Eagles, Swan Lake Refuge is also accepted as being part of the range for birds of the northern race. Sixty eagles were counted on the refuge January 5, 1972, as compared with 49 last year and 29 the year before. No attempt has been made to determine the percentage of representation from each of the two races, or, if indeed, both races are represented. By definition all are considered Southern Bald Eagles. Because of the differentiation in RBU values between the two races, a determination should be made. For the sake of the Bald Eagle population of North America, however, it matters not. All known beneficial tactics will be employed to its betterment without racial discrimination.

A release of 19 Northern Greater Prairie Chickens was made February 27. These were imports trapped in Oklahoma and obtained by the Missouri Department of Conservation in exchange for wild turkeys. Only a very few sightings, and these of single birds, were obtained throughout the year. Another release of about 10 birds is scheduled for 1972. Some 450 acres of the refuge is being managed primarily for the reestablishment of the Northern Prairie Chicken through the reestablishment of native prairie grasses.

III REFUGE DEVELOPMENT AND MAINTENANCE

A. Physical Development

About one mile of brush and trees along a drainage was cleared to create better prairie chicken habitat. About a half-mile of drainage ditch was cleaned and shaped to provide better drainage for 100 acres of cropland. About 350 feet of Silver Lake shoreline was rip rapped. The entire boundary of the refuge was reposted. The interior of quarters 13 was painted. The office was rejuvenated with new furniture, ecoustical ceiling, light fixtures, indoor-outdoor carpeting and better storage space.

B. Plantings

1. Aquatics and Marsh Plants

None planted, but pool drawdowns facilitated production of smartweed and millet on about 2,000 acres.

2. Trees and Shrubs

None planted, but prior pecan and Chinese chestnut plantings continue to thrive.

3. Upland Herbaceous Plants

Native prairie grasses sown in previous years are seemingly well established and providing good ground cover. Stalks averaged close to four feet tall.

4. Cultivated Crops

As previously stated, 1971 was a near perfect crop year. A dry spring allowed early planting, the crops were not flooded during the summer, and a dry autumn enabled a full-acreage crop of wheat to be sown. The dry autumn also permitted early and complete off-refuge harvests to preclude depredations. One long, hot, dry period extending through much of August and September probably reduced corn and sorghum yields some, but still yields were estimated to average 80 bushels per acre on over a 1,000 acres. Only a few stalks showed signs of southern corn blight. Insect damage also seemed at a minimum. Probably a combination of blight, drouth and insect damage, however, did cause above normal lodging of corn. Since this did not occur until after the corn was "made", the consequences were minimal. It permitted a more rapid than normal depletion of the refuge larder, but the food supply available on and off the refuge was evidently adequate to the extra heavy load placed on it by some 100,000 wintering geese.

Poor clover fields over-seeded again to clover proved unproductive. Some of the clover drowned and some burned. Geese made little use of these fields even as resting areas.

C. Collections and Receipts

1. Seed or Other Propagules

No seed was harvested. About 1,100 bushels of corn were received from Squaw Creek Refuge for trapping bait, and 1,500 bushels of wheat were received from DeSoto Refuge to sow for browse. The condition and quality of the seed was adequate to meet intended uses.

2. Specimens

Two great blue herons, 14 frogs, and about 25 catfish and carp were collected as part of the pesticide monitoring program. All specimens were turned over to Wildlife Services for testing and assessment.

D. Control of Vegetation

About 750 acres of corn were band-sprayed with atrazine at the rate

of one pound per acre mixed with 10 gallons of water to control giant foxtail. Good to excellent results was obtained.

Roadsides, picnic and headquarters areas were mowed as needed to control weeds and have a presentable appearance. Approximately 100 acres of grassed areas were mowed to control woody vegetation encroachment (willow sp. and cottonwood).

E. Planned Burning

Some 20 acres of marsh grass (primarily Reeds canary and cord grass) were burned to remove "old bales" of grass left there from previous years "hay balers", so the area could be mowed to control encroachment by woody vegetation. The dates of previous burns are unknown. Wildlife use of this area prior to burning seemed minimal. Little or no improvement in wildlife use after burning was noted. Subsequent burnings are thought necessary before any improvement in wildlife use will be noted. The burn is termed successful in removing undesirable litter, and preparing the area for easier and better control of encroachment by woody vegetation.

F. Fires

No uncontrolled fires occurred although dry conditions throughout the year presented great potential fire danger.

IV RESOURCE MANAGEMENT

A. Grazing

One special use permit was in effect to pasture one horse and two ponies on five acres of the refuge for a fee of $12.50. The pasture was adequate and no conflict between wildlife and livestock noted.

B. Haying

None

C. Fur Harvest

None

D. Timber Removal

None

E. Commercial Fishing

None

F. Other Uses

None

V FIELD INVESTIGATION OR APPLIED RESEARCH

A. Progress Report

1. Canada Goose Banding and Fluoroscopy

The quota called for 3,000 Canada geese to be banded of which 1,500 were to be preseason and 1,500 post season. A total of 2,796 were banded. Preseason banding operations extended from October 12 through October 28, with a total of 1,247 banded. The post season period extended from November 23, through December 9, with a total of 1,549 banded.

All geese were fluoroscoped for shot detection. Of the 2,796 banded, 837 or almost 30% were carrying shot. In the preseason sample 41% of the 769 adults and about 6.5% of the 478 immatures carried shot. In the post season sample 38% of the 1,076 adults and 16% of the 473 immatures carried shot. That immatures are much more susceptable to the gun than adults is further reinforced in the hunting section. Examination of harvested geese showed 1,339 immatures to only 264 adults taken, a ratio of 5 to 1.

Of the 2,796 geese trapped 1,845 or 66% were adults, and 951 or 34% were immatures. In the preseason sample there were 769 adults and 478 immatures for percentages of 62 and 38 respectively. The post season sample included 1,076, 69%, adults and 473, 31%, immatures.

There were 477 previously banded birds net trapped which comprises almost 15% of the total sample. In the preseason sample 182 banded geese out of 1,429 trapped constitutes almost 13%, and in the post season sample 295 out of 1,844 computes to be 16%. No conclusions are drawn from this except that 15% of a population banded should provide some answers, and that we have handled a lot of geese over the years; 15% of 125,000 is 18,750. Incidentally, since 1948 over 80,000 Canada geese have been banded at Swan Lake Refuge which should equal or better the Jack Minor Sanctuary bandings.

2. Deer Movement Study

A total of 47 deer were trapped on the refuge late last winter, and early spring, and marked with identifying collars and ear-streamers. This is part of a study to determine their movements on and off the refuge by graduate student Dave Turner under advisor Dr. Sparrowe of the Missouri Cooperative Wildlife Research Unit. Refuge and State conservation personnel are helping by recording their sightings of marked deer.

The study is still in conduct and no progress report has been issued. Four of the marked deer were harvested during the hunting season. One of them was taken with bow and arrow. Another was harvested about eight miles south of the refuge. One unconfirmed report placed one marked deer some 35 miles from the refuge. But so far, sightings show the deer to be "home-bodies", and not straying too far from food and sanctuary.

The study is being expanded in 1972, with more markings, and also transmitters being attached to about a dozen. So far in 1972, 80 deer have been marked, and trapping is still in progress. Lest we fear that soon all deer on the refuge will be wearing gaudy clothing, spot-lighting tours show about 1 in 6 to 1 in 8 deer sighted as bearing markings.

3. Reestablishment of the Prairie Chicken

As reported in other sections, attempts to restore this bird to the refuge have been disappointing. Sightings on the refuge have been few indeed. Still reports of sightings are frequent enough to kindle hope that there may be a few native birds in the general vicinity of the refuge as well as the transplants from Oklahoma. Those that remain are to be bolstered with a dozen more Oklahomans in 1972. It is hoped that the "missing link" for success can soon be found.before all hope vanishes and with it, the prairie chicken.

VI PUBLIC RELATIONS

A. Recreational Use

Some 90,000 visitors recreated for almost 175,000 hours on the refuge. Wildlife Observation attracted the most visitors, and Fishing provided the most visitor hours. "Open House" on October 24, accounted for the peak visitor load when some 8,000 people took the self-guided, auto tour. After the close of the goose hunting season a special auto-tour route was opened which served 11,000 visitors. There were 22,000 more visits made to the refuge in 1971 than in 1970; and 10,000 more in 1970 than in 1969. Nor is the end in sight. A newly formed area tourism association has hopes of attracting 100 times more people to the area than has ever been here before. Major attractions to be "pushed" by the association include hunting, fishing, country music and historical sites.

B. Official Refuge Visitors

Bureau Personnel

Dr. Sparrowe: January 8, February 9, and November 2; concerning "deer movement study".

Area Biologist Cummings: January 12 and 13, March 29, 30 and 31, May 19 and 20; Refuge Objectives.

Refuge Manager Burgess: January 12 and 13, March 29, 30 and 31: Refuge Objectives.

Mr. M. Anderson, Property Management: April 13; Inspection.

Asst. Supervisor Morgan: May 19 and 20; Refuge Objectives.

Refuge Manager Ed Moses: July 13 and 14; To view a wildlife refuge.

Dr. James Elder: July 28; Pick up heron carcasses for pesticide monitoring.

Mr. Andy Payne, U. S. D. I. Auditor: September 7; Autit primarily land holdings.

Asst. Supervisor Gritman: October 26 and 27; Inspection, Refuge Objectives and preparing for objectives presentation to Missouri Conservation Dept.

Regional Biologist Ellis: October 26 and 27; Review Refuge Objectives.

Messrs. Hammernich and Sontag: November 1 and 2; Discuss measuring Public Use.

Engineer Phillips: Novembef 1, 2 and 3; Public Use and well location.

Mr. Bergman: November 2; Pickup frogs and fish for Pesticide Monitoring.

U. S. G.M.A. Sanders, Hague and Basler; Numerous visits concerning law enforcement.

Missouri Department of Conservation of special note

Messrs. Swartz and Chambers: Numerous visits in filming Canada geese.

Biologists Babcock and Slagle: Numerous visits for waterfowl census and banding.

Biologists Torgeson and Porath: Numerous visits for deer management study.

Graduate Students Dave Turner, University of Missouri: Numerous for deer movement study.

C. Refuge Participation

Manager Timmerman, participated in State of Missouri "Wing Bee" at Swan Lake State Headquarters January 11.

Clerk Lentz, attended "Payroll Workshop" in Minneapolis January 26-28.

Bio. Tech. Hull, presented slide talk to 4-H clubs in Sumner March 1.

Manager Timmerman, attended "Objectives Workshop" at Chautauqua Refuge March 9-11.

Manager Manke, "talked" to Lions Club of Mendon, September 1.

Manager Manke and Clerk Lentz, attended P.P.B.E. workshop at Crab Orchard Refuge November 8-12.

Manager Manke, attended the Community Betterment meeting in Sumner December 18.

D. Hunting

A Flyway Council recommendation is to have the Eastern Prairie Population of Canada geese reach a level that would sustain a northward migration of 200,000 birds each spring. To this end the three heavy harvest states agreed to a nine-day season for Minnesota, a 23-day season for Iowa, and a 14,000-harvest quota for Missouri. At the present time it seems that these curtailments will enable the goal to be reached in about five years. A problem not yet reconciled is where the 200,000 birds will winter. Swan Lake Refuge cannot support that many geese.

The following pages taken from the public hunting area report summarize the proceedings and violations section very well. As is pointed out in Mr. German's State Report, cooperation between the State Conservation Department and the Bureau is excellent.

IV. HUNTING OPERATIONS

Reservation requests were handled in the same manner as previous years with the drawing being held on September 15th. There were 9,406 application cards in the drawing which was an increase of 305 above last year and 180 requests were received after the September 15th deadline. Bob Bryant, Prosecuting Attorney from Carroll County, officiated at the drawing with state and federal personnel assisting. 7,077 requests could not be filled and these hunters were mailed sorry cards. Also due to the early closure 1,395 closure cards were mailed to hunters holding late reservations.

Reservation data during the fourteen days open for hunting is as follows:

Number of Reservations Issued	979
Number of Reservations Cancelled	131
Number of Reservations Used	711
Number of Reservations Not Used	125
Number of Parties Waiting For Unclaimed Blinds	386
Number of Blinds Filled From The Waiting List	125

V. SUMMARY OF THE 1971 CANADA GOOSE SEASON

The 1971 Canada Goose season opened at one-half hour before sunrise on October 31st and ended at sunset on November 13th after reaching a total zone harvest of 13,022. The season was two days less than the 1970 season making it the shortest season on record. On the Swan Lake Wildlife Area 2,786 hunters bagged 1,953 Canada Geese, 56 Blue and Snow Geese and 5 White-fronted Geese for an average of .72 bird per hunter. In comparison, there were 3,144 hunters who harvested 2,107 Canada Geese, 150 Blue and Snow Geese and 3 White-fronted Geese for an average of .72 bird per hunter during the 1970 season.

Hunting pressure remained heavy until the last three days and the total number of hunters in the zone on opening day set a record of over 5,000. Mild weather conditions prevailed throughout the period and the birds moved in all directions during the first eleven days keeping hunter success rather high. As the bird movement decreased so did hunter success and hunter numbers. In fact on November 12th there were four pits on Swan Lake that were not filled which did not occur anytime during the 1970 season.

The ten shell limit imposed on hunters for the first time this year, outside the Swan Lake Area, was very well accepted and seemed to minimize some of the "sky-busting" which has taken place around the perimeter every past season. Observers reported some hunters leaving

blinds after firing their ten shells but there were those that had to test the regulation as you will note under violations on the last page of this report.

Food was abundant on both Swan Lake and Fountain Grove Areas and due to dry weather conditions local farmers were able to harvest crops early before the birds moved into their fields. This kept depredation complaints to a minimum.

Sex and age of the birds examined at headquarters is as follows:

Immatures			Adults		
Males	Females	Total	Males	Females	Total
670	665 4- Unknown	1,339	121	143	264

DAILY CANADA GOOSE HARVEST IN THE ZONE - 1971

Date	Canada Geese	Total
Oct. 31	2,145	2,145
Nov. 1	2,083	4,228
Nov. 2	1,251	5,479
Nov. 3	1,143	6,622
Nov. 4	1,131	7,753
Nov. 5	1,098	8,851
Nov. 6	929	9,780
Nov. 7	564	10,344
Nov. 8	682	11,026
Nov. 9	589	11,615
Nov. 10	409	12,024
Nov. 11	293	12,317
Nov. 12	359	12,676
Nov. 13	346	13,022

Estimated number of hunters - 28,306

COMPARISON OF ZONE TOTALS 1970-71

	1970	1971
Season Length	16 days	14 days
Hunters	36,678	28,306
Harvest	15,090	13,022
Harvest/Hunter	.50	.46
Hunters/Day	2,042	2,022

SWAN LAKE DAILY WATERFOWL SHOOTING RECORD - 1971

Date	No. of Hunters	Canada Geese	B&S Geese	W-F Geese	Total	Cripples	Ave. Kill Per Hunter
Oct. 31	221	169			169	11	.76
Nov. 1	214	194	6		200	20	.93
" 2	211	181	8		189	13	.86
" 3	209	163	3	1	167	9	.78
" 4	194	145	1		146	20	.75
" 5	196	169	2	1	172	18	.86
" 6	210	152	2		154	9	.73
" 7	215	87	5	1	93	13	.43
" 8	197	137	5		142	21	.72
" 9	202	133	9		142	8	.70
" 10	193	119	8	2	129	7	.67
" 11	177	96	3		99	11	.56
" 12	168	105	2		107	8	.64
" 13	179	103	2		105	5	.58
	2,786	1,953	56	5	2,014	173	.72

Swan Lake Canada Goose Kill	1,953
Fountain Grove Canada Goose Kill	1,269
Estimated Outside Canada Goose Kill	9,800
Total Canada Goose Kill In Zone	13,022
Harvest Quota For The 1971 Season	14,000

Total number of individual resident hunters using the area was 2,277.

COMPARISON OF SHOOTING DATA SINCE 1955

Year	Length of Season	Peak Population	No. of Hunters	Canada Goose Kill On Area	Ave. Kill per Hunter	Outside Kill	Bushels of Grain on Area
1955	53 days	133,500 (10-26)	10,137	8,836	.87	3,727	11,500
1956	70 days	55,000 (11-5)	11,204	3,118	.27	1,140	27,500
1957	70 days	42,000 (11-4)	10,360	3,680	.35	1,075	30,000
1958	70 days	59,500 (10-27)	9,256	6,186	.66	3,410	14,500
1959	70 days	57,000 (10-16)	11,014	5,254	.47	2,425	35,000
1960	31 days	86,850 (10-17)	6,343	6,895	1.08	3,680	16,000
1961	25 days	75,000 (10-16)	3,483	3,356	.96	3,116	21,000
1962	60 days	118,000 (11-21)	9,609	5,506	.57	7,208	26,280
1963	70 days	130,225 (10-21)	9,954	5,890	.59	10,244	52,600
1964	55 days	121,450 (10-19)	9,164	9,069	.98	15,691	29,240
1965	70 days	119,350 (11-8)	10,313	4,624	.44	12,255	86,300
1966	39 days	136,000 (10-31)	6,933	8,015	1.15	16,605	69,000
1967	24 days	127,265 (11-12)	4,216	5,274	1.25	22,669	35,250
1968	70 days	137,500 (11-5)	10,123	5,747	.56	16,518	100,000
1969	55 days	110,200 (10-26)	7,658	4,088	.52	15,615	25,000
1970	16 days	113,008 (11-8)	3,144	2,107	.67	12,980	63,000
1971	14 days	144,250 (11-13)	2,786	1,953	.72	11,069	83,000

NON-RESIDENT HUNTERS USING SWAN LAKE DURING 1971

State	Individual Hunters	No. of Times Hunted	No. of Geese Killed
Iowa	57	79	67
Illinois	34	34	28
Kansas	49	54	42
Indiana	1	1	1
Minnesota	2	2	1
Texas	1	1	0
California	2	2	2
Mississippi	1	1	1
Ohio	4	4	1
New Jersey	1	1	0
Maryland	1	1	1
Connecticut	1	2	2
Michigan	1	1	1
Nebraska	3	7	9
Totals	158	190	156

Year	No. of Individual Non-Resident Hunters	Length of Season
1971	158	14 Days
1970	224	16 Days
1969	488	55 Days
1968	599	70 Days
1967	333	24 Days
1966	469	39 Days
1965	523	70 Days
1964	370	55 Days
1963	332	70 Days

Number of Non-Residents applying for reservations ----- 571

Number of Non-Residents receiving reservations -------- 145

Number of Non-Residents receiving reservations thru Nov. 13 ---58

VIOLATIONS

Type of Violation	Completed Cases	Total Fines	Court Cost	Pending
Over 10 shell limit	7	$163.00	$77.00	
Refuge Trespass	9	105.00	88.00	
Attempt to take over limit of geese.	4	70.00	44.00	
Hunting on improper permit	1	35.00	11.00	
Non-resident hunting on resident permit.	1	35.00	11.00	
Shooting duck on refuge	1	10.00	11.00	
	23	$418.00	$242.00	

Refuge trespass - One not filed and one was a juvenile.

Over 10 shell limit outside the Swan Lake Area -	28	$484.00	$275.00	

One case was dismissed and two were juveniles.

Year	Season Length	No. of Completed Cases	Total Fines	Court Cost
1967	24 days	79	$1,190.00	$759.00
1968	70 days	60	1,113.00	660.00
1969	55 days	64	1,320.00	671.00
1970	16 days	36	650.00	319.00
1971	14 days	23	418.00	242.00

Once again we wish to express our sincere appreciation to the Swan Lake Refuge personnel for their excellent coopenation throughout 1971.

Respectfully Submitted,

James A. German

James A. German, Area Manager
Missouri Department of Conservation
Swan Lake Wildlife Management Area
Sumner, Missouri.

December 18, 1971

F. Safety

No lost-time accidents occurred during the year. As of December 31, Swan Lake Refuge had operated 2,451 days since the last lost-time accident.

Three safety films "Emergencies In The Making", "Safety Facts About Crossing The Tracks", and "Final Factor", were reviewed at the station. "Safe Attitudes" was discussed on several occasions. Special hazards were individually reviewed prior to undertaking unaccustomed duties.

The "infamous" banding-fluoroscopy room was made much more tenable this year. Much better house-keeping and the use of sweeping compound plus exhaust fans and a "goose-exhaust chute" greatly reduced the amount of choking dust and feathers in the air. Care and precautions taken to keep the geese clean and quiet from trap to band also helped reduce the dust problem. In addition, face masks were the accepted dress of the day, and whenever possible those affected most or hardest were excused from this duty.

VII OTHER ITEMS

1. A check for $17,569.72 was delivered to Chariton County under the Refuge Revenue Sharing Act.

2. Several long-term managers climbed aboard a merry-go-round to grab a promotional ring. After eight years at Swan Lake, Bob Timmerman transferred to Shiawassee. Jack Frye with a similar tenure at Shiawassee, moved to Ottawa. And after ten years at Ottawa, Al Manke reported to Swan Lake. Much to their surprise and some consternation, pulling up their deeply imbedded roots did not result in the immediate and complete collapse of their old stomping grounds. In fact, each refuge gained. For it is written in the "Red Book", that each live refuge animal transplanted is worth 10,000 RBU's.

3. There was a goose whose eggs were solid gold. But its life was with its keeper. He kept not, and gone were goose and gold. Not so at Swan Lake. Many are they who gather the gold, but here the source is exalted. The pictorial section depicts awareness of the gold that geese are made of, and so the keeper's kept.

SIGNATURE PAGE

Submitted by:

Alfred O. Manke
(Signature)
Alfred O. Manke

Date: April 13, 1972

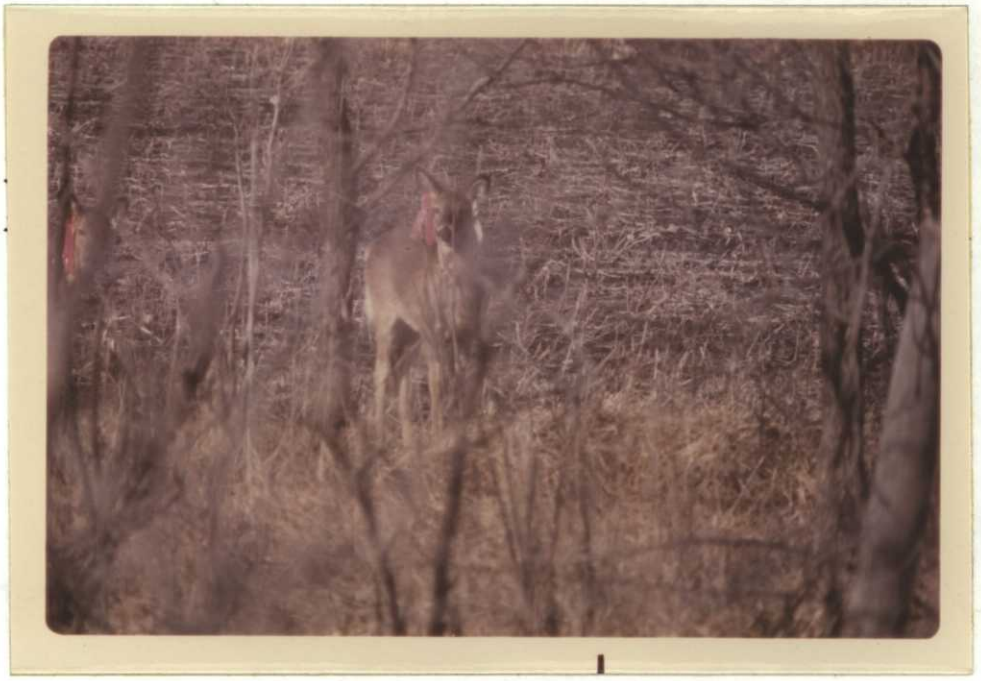
Refuge Manager
Title

Approved, Regional Office:

Date: APR 17 1972

James C. Gutman
(Signature)

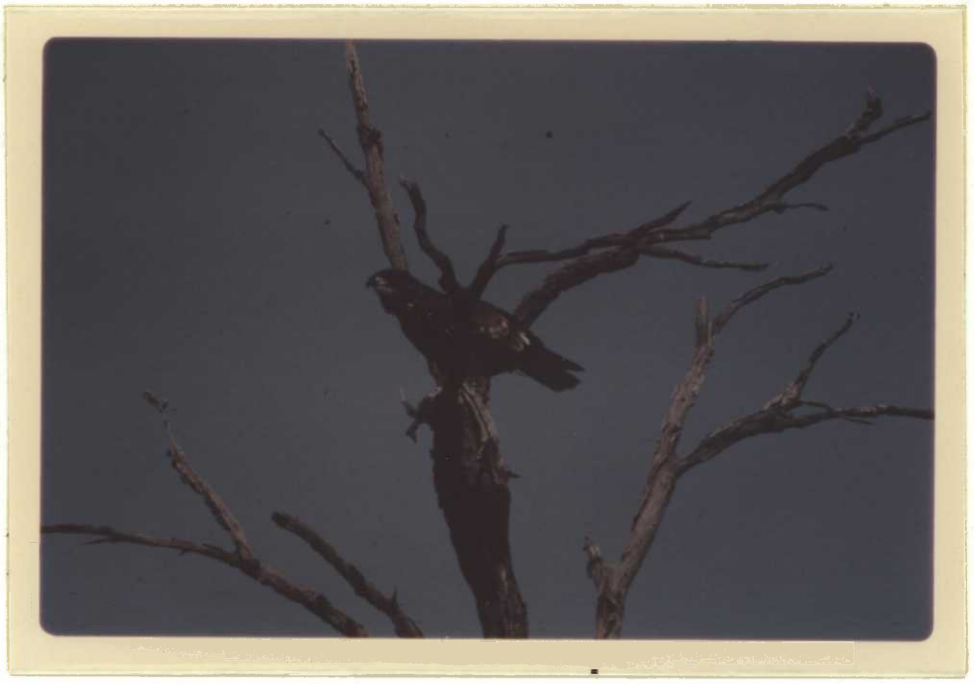
ASST
Regional Refuge Supervisor



Deer Study. Ear-streamer color combinations designates trap location and year tagged.
72-C3-9 2/72 Manke

Deer Study. Does wear red collars.
72-C3-14 2/72 Manke

Deer Study. Bucks wear white. Evidently he thought earrings unmasculine.
72-C-3-12 2/72 Manke



A real blue-chip, 500 RBU's perched there.
72-C5-20 3/72 Manke

MODERN SAGA OF THE GOLDEN GOOSE

Usual announcements and exploitation. 72-C5-3 3/72 Manke

Quality improvement as the eggs are burnished.
72-C5-1 3/72 Manke

Higher quality as new replaces old. 72-C5-4 3/72 Manke

This is Mike Milonski's Place 9/71

Slightly unusual blind placement. 72-C5-5 3/72 Manke

A "going" business? 72-C3-3 2/72 Manke

An "established" business! 72-C2-16 2/72 Manke

As one community depicts itself. 72-C3-2 2/72 Manke

As another community depicts itself. 72-C4-8 2/72 Manke

Silhouettes decorate the prized "Missouri Community Betterment" sigh. 72-C2-18 2/72 Manke

As they do on everything leading to the sign.
72-C2-17 2/72 Manke

Silhouette name-plates are displayed on all houses in Sumner. 72-C2-19 2/72 Manke

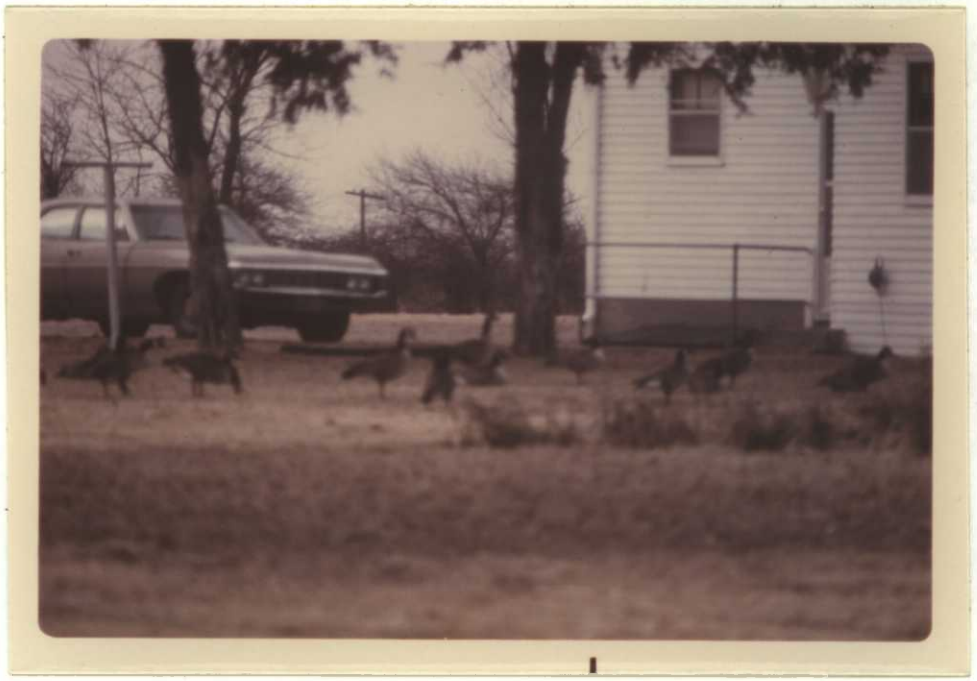
"The real thing" suggesting a change in the name.
72-C5-13 3/72 Manke

And geese do dominate Swan Lake. Geese in the air ....
72-C1-7 2/72 Manke

Geese in the corn .... 72-C1-2 2/72 Manke

Geese in the grass .... 72-C4-19 2/72 Manke

And geese on ice .... 72-C3-6 2/72 Manke



Geese in the backyard .... 72-C1-18 2/72 Manke

And geese in the front ... 72-C2-13 2/72 Manke

Geese of a different color ... 72-C4-12 2/72 Manke

And office inspectors. Taken while sitting at desk.
72-C2-1 2/72 Manke

The object of their inspection. Bennie "goosey" Hull trying to shed a little light on the matter.
72-C1-15 2/72 Manke

3-1750
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(Rev. March 1953)

WATERFOWL

REFUGE Swan Lake MONTHS OF 1/3 TO 3/6, 19 71

(1) Species	(2) Weeks of reporting period 1	2	3	4	5	6	7	8	9	10
Swans:										
Whistling	1/3-1/9	1/10-1/16	1/17-23	1/24-30	1/31-2/6	2/7-2/13	2/14-20	2/21-27	2/28-3/6	
Trumpeter										
Geese:										
Canada	51,000	50,000	55,000	70,000	50,000	50,000	60,000	50,000	45,000	
Cackling										
Brant										
White-fronted										
Snow /										
Blue				3,000			3,000	2,000	5,000	
Other										
Ducks:										
Mallard	250			500	50	100	900	800	700	
Black										
Gadwall										
Baldpate							20	20	20	
Pintail				50	10	50	300	100	100	
Green-winged teal							50	20	50	
Blue-winged teal										
Cinnamon teal										
Shoveler										
Wood										
Redhead							30	20	10	
Ring-necked						10	40	300	40	
Canvasback							20	20	10	
Scaup								50	50	
Goldeneye							10	10		
Bufflehead							50	30	20	
Ruddy							10		10	
Other C. Merganser						20	400	50	20	
H. Merganser							20	10	10	
Coot:										

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Cont. NR-1
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WATERFOWL
(Continuation Sheet)

REFUGE Swan Lake MONTHS OF 3/7 TO 5/1, 19 71

(1) Species	(2) Weeks of reporting period: 11	12	13	14	15	16	17	18	(3) Estimated waterfowl days use	(4) Production: Broods seen	Broods: Estimat total
Swans:	3/7-13	3/14-20	3/21-27	3/28-4/3	4/4-10	4/11-17	4/18-24	4/25-5/1			
Whistling											
Trumpeter											
Geese:											
Canada	40,000	35,000	25,000	15,000	3,000	300	300	200	4,198,600		
Cackling											
Brant											
White-fronted	20	300	10						2,310		
Snow											
Blue /	5,000	15,000	8,000	3,000	500	50	25	15	312,130		
Other											
Ducks:											
Mallard	900	1,200	5,000	4,000	1,000	200	50	50	109,900		
Black		100	100	100					2,100		
Gadwall	20	20	20	1,000	1,000	2,000	50	10	28,840		
Baldpate	20	40	500	4,000	2,000	1,000	20	20	53,620		
Pintail	200	300	200	200	20				10,710		
Green-winged teal	50	100	300	300	300	400	100	30	11,900		
Blue-winged teal		10	200	1,500	2,000	3,000	1,500	500	60,970		
Cinnamon teal											
Shoveler		10	200	8,000	10,000	12,000	1,000	60	218,890		
Wood			20	200	400	400	400	400	12,740		
Redhead	10	10	300	300	50				5,110		
Ring-necked	20	30	500	400	1,500	100	50		20,930		
Canvasback	10		20	50					910		
Scaup	20	30	100	10,000	3,000	200			94,150		
Goldeneye									140		
Bufflehead	10	10	10	10	10				1,050		
Ruddy	30	100	500	400	2,000	700	100		26,950		
Other C. Merganser	10	10	10						3,640		
H. Merganser	10	10	10	10	10				630		
Coot:	30	200	3,000	5,000	4,000	3,000	1,000	1,000	120,610		

(over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans			
Geese	4,513,040	73,000	
Ducks	663,180	30,470	
Coots	120,610	5,000	

SUMMARY

Principal feeding areas Lake shore and marginal areas.

Principal nesting areas

Reported by Robert H. Timmerman

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

(1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.

(2) Weeks of Reporting Period: Estimated average refuge populations.

(3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.

(4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.

(5) Total Days Use: A summary of data recorded under (3).

(6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.

(7) Total Production: A summary of data recorded under (4).

Interior Duplicating Section, Washington, D. C. 37944
1953

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WATERFOWL

REFUGE Swan Lake MONTHS OF May TO August, 19 71

(1) Species	(2) Weeks of reporting period 1	2	3	4	5	6	7	8	9	10
	5/2-5/8	5/9-5/15	5/16-5/22	5/23-5/29	5/30-6/5	6/6-6/12	6/13-6/19	6/20-6/26	6/27-7/3	7/4-7/10
Swans:										
Whistling										
Trumpeter										
Geese:										
Canada	200	200	200	200	200	200	200	200	200	200
Cackling										
Brant										
White-fronted										
Snow										
Blue										
Other										
Ducks:										
Mallard	50	50	50	50	50	50	50	50	50	50
Black										
Gadwall										
Baldpate										
Pintail										
Green-winged teal										
Blue-winged teal	200	200	100	20	20	20	20	20	20	20
Cinnamon teal										
Shoveler	100	100								
Wood	400	400	400	400	400	400	400	400	400	400
Redhead										
Ring-necked	50	25								
Canvasback										
Scaup	50	25								
Goldeneye										
Bufflehead										
Ruddy	50									
Other										
Coot:	100	50								

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WATERFOWL
(Continuation Sheet)

REFUGE Swan Lake MONTHS OF May TO August, 1971

(1) Species	(2) Weeks of reporting period: 11	12	13	14	15	16	17	18	(3) Estimated waterfowl days use	(4) Production: Broods seen	Broods: Estimated total
	7/11-7/17	7/18-24	7/25-31	8/1-8/7	8/8-14	8/15-21	8/22-28	8/29-9/4			
Swans:											
Whistling											
Trumpeter											
Geese:											
Canada	200	200	200	200	200	200	200	200	25,200		
Cackling											
Brant											
White-fronted											
Snow											
Blue											
Other											
Ducks:											
Mallard	50	50	50	50	50	100	100	200	8,050		
Black											
Gadwall											
Baldpate											
Pintail											
Green-winged teal						10	10	10	210		
Blue-winged teal	20	20	20	20	20	50	100	100	6,930		
Cinnamon teal											
Shoveler									1,400		
Wood	400	400	400	400	400	400	400	400	50,400		
Redhead											
Ring-necked									525		
Canvasback											
Scaup									525		
Goldeneye											
Bufflehead											
Ruddy									350		
Other											
Coot:									1,057		

(over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans			
Geese	25,200	200	
Ducks	68,390	900	
Coots	1,057	100	

SUMMARY

Principal feeding areas Lake margins, meadows, some crops.

Principal nesting areas

Reported by

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

(1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.

(2) Weeks of Reporting Period: Estimated average refuge populations.

(3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.

(4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.

(5) Total Days Use: A summary of data recorded under (3).

(6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.

(7) Total Production: A summary of data recorded under (4).

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1953

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WATERFOWL

REFUGE Swan Lake MONTHS OF September TO December, 19 71

(1) Species	(2) Weeks of reporting period 1	2	3	4	5	6	7	8	9	10
Swans:	9/5-9/11	9/12-9/18	9/19-25	9/26-10/2	10/3-9	10/10-16	10/17-23	10/24-30	10/31-11/6	11/7-13
Whistling										
Trumpeter										
Geese:										
Canada	200	2,000	7,500	25,000	50,000	85,000	100,000	113,000	111,000	120,000
Cackling										
Brant							100	100	100	100
White-fronted										
Snow /										
Blue			200	100	1,200	16,000	15,000	10,000	18,000	33,000
Other										
Ducks:										
Mallard	1,000	2,000	5,000	2,000	5,000	5,000	7,000	10,000	30,000	40,000
Black										
Gadwall	100	500	500	1,000	2,000	2,000	5,000	5,000	2,000	1,000
Baldpate	500	500	500	3,000	5,000	5,000	10,000	10,000	5,000	3,000
Pintail	500	500	700	5,000	20,000	20,000	30,000	30,000	30,000	35,000
Green-winged teal	500	500	1,000	1,000	5,000	1,000	1,000	1,000	1,000	1,000
Blue-winged teal	5,000	10,000	25,000	2,000	5,000	1,000	1,000	500		
Cinnamon teal										
Shoveler		100	300	500	1,000	500	1,000	300		
Wood	500	1,000	2,000	500	1,000	500	1,000	200		
Redhead										
Ring-necked										
Canvasback										
Scaup										
Goldeneye										
Bufflehead										
Ruddy										
Other										
Coot:	1	1	500	1,500	7,000	4,000	4,000	7,500	10,000	5,000

Int. Dup. Sec., Wash., D.C. 37944

3 -1750a
Cont. NR-1
(Rev. March 1953)

WATERFOWL
(Continuation Sheet)

REFUGE Swan Lake MONTHS OF September TO December, 19 71

(1) Species	(2) Weeks of reporting period: 11	12	13	14	15	16	17	18	(3) Estimated waterfowl days use	(4) Production: Broods seen	Broods: Estimate total
Swans:											
Whistling	11/14-20	11/21-27	11/28 - 12/4	12/5-11	12/12-18	12/19-25	12/26-1/1				
Trumpeter											
Geese:											
Canada	128,000	120,000	120,000	100,000	100,000	100,000	100,000		9,671,900		
Cackling											
Brant											
White-fronted	100	100	100						4,900		
Snow											
Blue	30,000	25,000	20,000	20,000	10,000	10,000	8,000		1,452,500		
Other											
Ducks:											
Mallard	50,000	75,000	75,000	250,000	150,000	100,000	10,000		5,719,000		
Black											
Gadwall	5,000	5,000	5,000	1,000	1,000				252,700		
Baldpate	4,000	4,000	1,000	1,000	1,000				381,500		
Pintail	30,000	30,000	25,000	25,000	10,000	5,000	1,000		2,083,900		
Green-winged teal	1,000	1,000	1,000	1,000	500				122,500		
Blue-winged teal									346,500		
Cinnamon teal											
Shoveler									25,900		
Wood									46,900		
Redhead				300	100				2,800		
Ring-necked		1,000	1,000	1,000	500				24,500		
Canvasback				100	100				1,400		
Scaup		1,000	1,000	1,000	500				24,500		
Goldeneye											
Bufflehead											
Ruddy											
Other											
ıser				100	100	100	100		2,800		
Coot:	1,000	1,000	1,000						297,514		

(over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans			
Geese	11,129,300	158,000	0
Ducks	9,034,900	280,500	200
Coots	297,514	10,000	0

SUMMARY

Principal feeding areas Corn and wheat fields for geese moist soil vegetation and milo fields for ducks.

Principal nesting areas wooded area along creeks

Reported by Alfred O. Manke

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

(1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.

(2) Weeks of Reporting Period: Estimated average refuge populations.

(3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.

(4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.

(5) Total Days Use: A summary of data recorded under (3).

(6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.

(7) Total Production: A summary of data recorded under (4).

Interior Duplicating Section, Washington, D. C. 37944
1953

3-1751
Form NR-1A
(Nov. 1945)

MIGRATORY BIRDS
(other than waterfowl)

Refuge Swan Lake Months of September to December 19 71

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
White Pelican	200	Present	3,000	9/20	2	12/7				5,000
Great Blue Heron	35	Present	35	9/20	3	Present				100
D. C. Cormorant	2	10/5	25	10/21	2	10/29				50
Sora Rail	?	Present	200	9/22	?	10/28				500
Little Blue Heron	1	10/15	1	10/15	1	10/19				1
Pied-billed grebe	20	10/15	50	10/21	2	11/5				200
II. Shorebirds, Gulls and Terns:										
Common Tern			75	9/20						200
Caspian Tern			19	9/20						50
Franklin Gull			500	10/21						1,500
Killdeer			500	9/20						1,000
Avocet	2	9/24	2	9/24-10/30	2	10/30				2
Lesser Yellowlegs			150	9/20						1,000
Ring-billed Gull			25	10/21						200
Wilson Snipe			300	9/20						1,000

(over)

(1)	(2)	(3)		(4)	(5)	(6)
III. Doves and Pigeons:						
Mourning dove	Resident	2,500	9/20	Resident		5,000
White-winged dove						
IV. Predaceous Birds:						
Golden eagle						
Duck hawk						
Horned owl	Resident	3	12/10			50
Magpie						
Raven						
Crow	Resident	100	12/10	Present		500
Bald Eagle	3 10/4	60	12/17	Present		75
Red-tailed Hawk	Resident	150	12/17	Present		200
Marsh Hawk		25	12/17	Present		100
Rough-legged Hawk		25	10/21	Present		200
Sparrow Hawk	Resident	12	10/21			100

Reported by Alfred O. Manke

INSTRUCTIONS

(1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiiformes)
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)

(2) First Seen: The first refuge record for the species for the season concerned.

(3) Peak Numbers: The greatest number of the species present in a limited interval of time.

(4) Last Seen: The last refuge record for the species during the season concerned.

(5) Production: Estimated number of young produced based on observations and actual counts.

(6) Total: Estimated total number of the species using the refuge during the period concerned.

INT.-DUP. SEC., WASH., D.C.

59317

3-1751
Form NR-1A
(Nov. 1945)

MIGRATORY BIRDS
(other than waterfowl)

Refuge Swan Lake Months of January to April 1971

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
White Pelican	20	3/27	1,500	3/30						
Great Blue Heron	1	3/24								
Common Egret	1	4/14								
Cattle Egret	1	4/27	+ 10	4/28	(On Bill Stewart Farm)					
D.C.Cormorant	2	4/14								
II. Shorebirds, Gulls and Terns:										
Killdeer	3	3/12	Major Migration	3/19						
Upland Plover	1	4/14								
Lesser Yellowlegs	2	3/27								

(over)

(1)	(2)		(3)		(4)		(5)	(6)
III. Doves and Pigeons:								
Mourning dove								
White-winged dove	Permanent Resident							
IV. Predaceous Birds:								
Golden eagle								
Duck hawk			2	1/6				
Horned owl								
Magpie	Permanent resident							
Raven								
Crow	Permanent resident							
Bald Eagle			47	1/6	1	3/26		
Turkey Vulture	1	3/29						

Reported by Robert W. Timerman

INSTRUCTIONS

(1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiiformes)
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)

(2) First Seen: The first refuge record for the species for the season concerned.

(3) Peak Numbers: The greatest number of the species present in a limited interval of time.

(4) Last Seen: The last refuge record for the species during the season concerned.

(5) Production: Estimated number of young produced based on observations and actual counts.

(6) Total: Estimated total number of the species using the refuge during the period concerned.

INT.-DUP. SEC., WASH., D.C.

59317

3-1751
Form NR-1A
(Nov. 1945)

MIGRATORY BIRDS
(other than waterfowl)

Refuge Swan Lake Months of May to August 19 71

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
White Pelican	3	8/5	150	8/27						150
Great Blue Heron	Summer Resident		100	8/27						150
Green Heron	Summer Resident									25
American Bittern	Summer Resident		25	August						100
II. Shorebirds, Gulls and Terns:										
Killdeer	Summer Resident		100	August						250
Greater Yellowlegs			100	August						500
Lesser Yellowlegs			50	August						100
Upland Plover			6	8/27						25
Common Tern			25	8/27						150
Black Tern			7	8/27						50

(over)

(1)	(2)	(3)		(4)	(5)	(6)
III. Doves and Pigeons:						
Mourning dove	Summer Resident	150	8/27			4,000
White-winged dove						
IV. Predaceous Birds:						
Golden eagle						
Duck hawk						
Horned owl	None observed, estimated number of permanent residents					100
Magpie						
Raven						
Crow	Permanent Resident	25	frequently			100
Turkey Vulture	Summer Resident	3	August			10
Marsh Hawk		3	August			10
Redtailed Hawk	Summer Resident	2	August			25

Reported by Alfred O. Manke

INSTRUCTIONS

(1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiiformes)
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)

(2) First Seen: The first refuge record for the species for the season concerned.

(3) Peak Numbers: The greatest number of the species present in a limited interval of time.

(4) Last Seen: The last refuge record for the species during the season concerned.

(5) Production: Estimated number of young produced based on observations and actual counts.

(6) Total: Estimated total number of the species using the refuge during the period concerned.

INT.-DUP. SEC., WASH., D.C.

59317

3-1750b
Form NR-1B
(Rev. Nov. 1957)

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
BUREAU OF SPORT FISHERIES AND WILDLIFE

WATERFOWL UTILIZATION OF REFUGE HABITAT

Refuge Swan Lake For 12-month period ending August 31, 19 71

Reported by Alfred O. Manke Title Refuge Manager

(1) Area or Unit Designation	(2) Habitat Type	(2) Habitat Acreage	(3) Use-days	(3) Use-days	(4) Breeding Population	(5) Production
I	Crops	700	Ducks	1,800,000	0	0
	Upland	200	Geese	6,000,000	0	0
Swan Lake	Marsh	300	Swans	0	0	0
	Water	600	Coots	200,000	0	0
	Total	1,800	Total	8,000,000	0	0
II	Crops	670	Ducks	1,500,000	40	100
	Upland	1,000	Geese	4,000,000	0	0
Silver Lake	Marsh	530	Swans	0	0	0
	Water	1,800	Coots	500,000	0	0
	Total	4,000	Total	6,000,000	40	100
III	Crops	830	Ducks	1,900,000	60	200
	Upland	300	Geese	5,900,000	0	0
South Lake	Marsh	1,570	Swans	0	0	0
	Water	300	Coots	400,000	0	0
	Total	3,000	Total	9,400,000	60	200
IV	Crops	400	Ducks	395,650	100	200
	Upland	1,650	Geese	222,910	0	0
River Bottoms	Marsh	20	Swans	0	0	0
	Water	30	Coots	8,677	0	0
	Total	2,100	Total	627,227	100	200
	Crops	2,600	Ducks	7,195,650	200	500
	Upland	3,150	Geese	15,722,910	0	0
TOTALS	Marsh	2,420	Swans	0	0	0
	Water	2,730	Coots	1,108,667	0	0
	Total	10,900	Total	24,027,227	200	500
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			

(over)

INSTRUCTIONS

All tabulated information should be based on the best available techniques for obtaining these data. Estimates having no foundation in fact must be omitted. Refuge grand totals for all categories should be provided in the spaces below the last unit tabulation. Additional forms should be used if the number of units reported upon exceeds the capacity of one page. This report embraces the preceding 12-month period, NOT the fiscal or calendar year, and is submitted annually with the May-August Narrative Report.

(1) Area or Unit: A geographical unit which, because of size, terrain characteristics, habitat type and current or anticipated management practices, may be considered an entity apart from other areas in the refuge census pattern. The combined estimated acreages of all units should equal the total refuge area. A detailed map and accompanying verbal description of the habitat types of each unit should be forwarded with the initial report for each refuge, and thereafter need only be submitted to report changes in unit boundaries or their descriptions.

(2) Habitat: Crops include all cultivated croplands such as cereals and green forage, planted food patches and agricultural row crops; upland is all uncultivated terrain lying above the plant communities requiring seasonal submergence or a completely saturated soil condition a part of each year, and includes lands whose temporary flooding facilitates use of non-aquatic type foods; marsh extends from the upland community to, but not including, the water type and consists of the relatively stable marginal or shallow-growing emergent vegetation type, including wet meadow and deep marsh; and in the water category are all other water areas inundated most or all of the growing season and extending from the deeper edge of the marsh zone to strictly open-water, embracing such habitat as shallow playa lakes, deep lakes and reservoirs, true shrub and tree swamps, open flowing water and maritime bays, sounds and estuaries. Acreage estimates for all four types should be computed and kept as accurate as possible through reference to available maps supplemented by periodic field observations. The sum of these estimates should equal the area of the entire unit.

(3) Use-days: Use-days is computed by multiplying weekly waterfowl population figures by seven, and should agree with information reported on Form NR-1.

(4) Breeding Population: An estimate of the total breeding population of each category of birds for each area or unit.

(5) Production: Estimated total number of young raised to flight age.

Interior Duplicating Section, Washington, D. C. 27580

3-1750c
Form NR-1C
(Sept. 1960)

WATERFOWL HUNTER KILL SURVEY

Refuge Swan Lake

Year 1961

(1) Weeks of Hunting	(2) No. Hunters Checked	(3) Hunter Hours	(4) Waterfowl Species and Nos. of Each Bagged	(5) Total Bagged	(6) Crippling Loss	(7) Total Kill	(8) Est. No. of Hunters	(9) Est. Total Kill
/31 - 11/6	1,455	7,000	Canada goose, B & S geese, W. F. Goose	1,197	100	1,297	1,455	1,297
/7 - 11/13	1,331	7,000	" " " "	817	73	890	1,331	890
tals	2,786	14,000	" " " "	2,014	173*	2,187	2,786	2,187

Canada geese Harvested	1,953
B & S geese Harvested	56
White-fronted geese Harvested	5
Total	2,014

*Cripple-loss based on hunter reports, probably about twice as many.

(over)

INSTRUCTIONS

(1) The first week of hunting begins with opening day and ends at the close of hunting 6 days later. Successive weeks follow the same pattern.

(2) The goal is to survey a minimum of 25 percent of refuge hunters each week and to record data only from those who have completed their day's hunting. This information should be collected during each day of the week and in each area hunted in relative proportion to the hunter effort expended. When the 25 percent goal cannot be achieved, particular care should be taken to collect representative data.

(3) Record the total number of hours the hunters spent hunting on the refuge.

(4) List waterfowl species in decreasing order of numbers bagged. Sample entry: Mallard (61), Pintail (36), Redhead (16), Gadwall (11), Widgeon (6), Coot (4), Canada Goose (3), Green-winged Teal (1).

(5) Record total numbers of waterfowl bagged.

(6) Record total numbers of waterfowl reported knocked down but not recovered.

(7) Total of Columns 5 and 6.

(8) Estimate the total number of hunters who hunted on the refuge during the week, including hunters checked (Column 2).

(9) Kill sample projected to 100 percent. Column 9 = $\frac{\text{Column 8}}{\text{Column 2}}$ x Column 7.

3-1752
Form NR-2
(April 1946)

UPLAND GAME BIRDS

Refuge Swan Lake Months of January to April, 19 71

(1) Species	(2) Density	(3) Young Produced			(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres Per Bird	Number broods observed	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Bob-white									400	
Ring-necked Pheasant										Occasional sightings along north and east boundary
Greater Prairie Chicken									19	These birds were trapped in northern Osage County near Foraker, Oklahoma. The release on Swan Lake was made on February 27.

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS*

(1) SPECIES: Use correct common name.

(2) DENSITY: Applies particularly to those species considered in removal programs (public hunts,etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.

(4) SEX RATIO: This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.

(5) REMOVALS: Indicate total number in each category removed during the report period.

(6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.

(7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

*Only columns applicable to the period covered should be used.

3-1752
Form NR-2
(April 1946)

UPLAND GAME BIRDS

Refuge Swan Lake Months of May to August, 19 71

(1) Species	(2) Density	(3) Young Produced			(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres Per Bird	Number broods observed	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Bobwhite Quail	Upland woods, crops, and field borders - 400 Ac.	10			50-50				400	
Ring-necked Pheasant	Same as for Quail	400							10	None observed on refuge.
Greater Prairie Chicken	Native and exotic grasses and weeds 400 acres	40							10	Estimated (19 transplanted February 1971) A few sightings one several miles from point of release on dike road near South Pool.

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS*

(1) SPECIES: Use correct common name.

(2) DENSITY: Applies particularly to those species considered in removal programs (public hunts,etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.

(4) SEX RATIO: This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.

(5) REMOVALS: Indicate total number in each category removed during the report period.

(6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.

(7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

*Only columns applicable to the period covered should be used.

3-1752
Form NR-2
(April 1946)

UPLAND GAME BIRDS

Refuge Swan Lake Months of September to December, 19 71

(1) Species	(2) Density	(3) Young Produced			(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres Per Bird	Number broods observed	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Bobwhite Quail	Cropland 3,000 Upland med. 500 Mixed Timber 2,500	10	0	600	50% - 50%	-	-	-	600	Poor interesperesion of cover types, and much of habitat subject to flooding.
Greater Prairie Chicken	Upland Meadow with some native grasses 500	50	0	10	?	-	-	-	10	Reintroduction of 19 in Feb 1971. No sightings since June.

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS*

(1) SPECIES: Use correct common name.

(2) DENSITY: Applies particularly to those species considered in removal programs (public hunts,etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.

(4) SEX RATIO: This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.

(5) REMOVALS: Indicate total number in each category removed during the report period.

(6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.

(7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

*Only columns applicable to the period covered should be used.

3-1753
Form NR-3
(June 1945)

BIG GAME

Refuge Swan Lake Calendar Year 1971

(1) Species	(2) Density	(3) Young Produced	(4) Removals				(5) Losses			(6) Introductions		(7) Estimated Total Refuge Population		(8) Sex Ratio
Common Name	Cover types, total Acreage of Habitat	Number	Hunting	For Re-stocking	Sold	For Research	Predation	Disease	Winter Loss	Number	Source	At period of Greatest use	As of Dec. 31	
White-tailed Deer	Bottom-land Timber and cropland. 5,000 Ac.	200	-	-	-	-	-	-	-	-	-	500	350	

Remarks: Estimated 25 road-kills during year. Estimated 75 of "refuge herd" removed by hunters off-refuge. Floods "push" deer off refuge.

Reported by Alfred O. Manke

INSTRUCTIONS

Form NR-3 - BIG GAME

(1) SPECIES: Use correct common name; i.e., Mule deer, black-tailed deer, white-tailed deer. It is unnecessary to indicate sub-species such as northern or Louisiana white-tailed deer.

(2) DENSITY: Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge: once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) YOUNG PRODUCED: Estimated total number of young produced on refuge.

(4) REMOVALS: Indicate total number in each category removed during the year.

(5) LOSSES: On the basis of known records or reliable estimates indicate total losses in each category during the year.

(6) INTRODUCTIONS: Indicate the number and refuge or agency from which stock was secured.

(7) TOTAL REFUGE POPULATION: Give the estimated population of <u>each</u> <u>species</u> on the refuge at period of its greatest abundance and also as of Dec. 31.

(8) SEX RATIO: Indicate the percentage of males and females of each species as determined from field observations or through removals.

INT.-DUP. SEC., WASH., D.C. 59319

3-1754
Form NR-4
(June 1945)

SMALL MAMMALS

Refuge Swan Lake Year ending April 30, 1971

(1) Species	(2) Density		(3) Removals					(4) Disposition of Furs						(5)
								Share Trapping						
Common Name	Cover Types & Total Acreage of Habitat	Acres Per Animal	Hunting	Fur Harvest	Predator Control *	For Re-stocking	For Re-search	Permit Number	Trappers Share	Refuge share	Total Refuge Furs Shipped	Furs Donated	Furs Destroyed	Total Population
Raccoon														500
Muskrat														300
Coyote														15
Beaver														20
Red Fox														5
Grey Fox														5
Mink														30
Fox Squirrel														2,000
Grey Squirrel														1,000
Cottontail														1,000
Opossum														300
Striped Skunk														50
Woodchuck														100
Franklin's Ground Squirrel														50

* List removals by Predator Animal Hunter

REMARKS:

Reported by Robert H. Timmerman

INSTRUCTIONS

Form NR-4 - SMALL MAMMALS (Include data on all species of importance in the management program; i. e., muskrats, beaver, coon, mink, coyote. Data on small rodents may be omitted except for estimated total population of each species considered in control operations.)

(1) SPECIES: Use correct common name. Example: Striped skunk, spotted skunk, short-tailed weasel, gray squirrel, fox squirrel, white-tailed jackrabbit, etc. (Accepted common names in current use are found in the "Field Book of North American Mammals" by H. E. Anthony and the "Manual of the Vertebrate Animals of the Northeastern United States" by David Starr Jordan.)

(2) DENSITY: Applies particularly to those species considered in removal programs. Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottom land hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) REMOVALS: Indicate the total number under each category removed since April 30 of the previous year, including any taken on the refuge by Service Predatory Animal Hunter. Also show any removals not falling under headingslisted.

(4) DISPOSITION OF FUR: On share-trapped furs list the permit number, trapper's share, and refuge share. Indicate the number of pelts shipped to market, including furs taken by Service personnel. Total number of pelts of each species destroyed because of unprimeness or damaged condition, and furs donated to institutions or other agencies should be shown in the column provided.

(5) TOTAL POPULATION: Estimated total population of each species reported on as of April 30.

REMARKS: Indicate inventory method(s) used, size of sample area(s), introductions, and any other pertinent information not specifically requested.

32715

3-1755
Form NR-5

DISEASE

Refuge Swan Lake Year 19 72

Botulism - NONE

Lead Poisoning or other Disease - NONE

Period of outbreak _____

Period of heaviest losses _____

Losses:

	Actual Count	Estimated
(a) Waterfowl		
(b) Shorebirds		
(c) Other		

Number Hospitalized	No. Recovered	% Recovered
(a) Waterfowl		
(b) Shorebirds		
(c) Other		

Areas affected (location and approximate acreage) _____

Water conditions (average depth of water in sickness areas, reflooding of exposed flats, etc.

Condition of vegetation and invertebrate life _____

Remarks _____

Kind of disease _____

Species affected _____

Number Affected

Species	Actual Count	Estimated

Number Recovered _____

Number lost _____

Source of infection _____

Water conditions _____

Food conditions _____

Remarks _____

INT.-DUP., D.C.- 53319-59

3-1757
Form NR-7
(Rev.June 1960)

(1)

NONAGRICULTURAL COLLECTIONS, RECEIPTS, AND PLANTINGS

Refuge Swan Lake Year 1972

Species	Collections and Receipts (Seeds, rootstocks, trees, shrubs)						Plantings (Marsh - Aquatic - Upland)						
	Amount (Lbs., bus., etc.)	(2) C or R	Date	Method or Source	Cost	(3) Total Amount on Hand	Location of Area Planted	Rate of Seeding or Planting	Amount Planted (Acres or Yards of Shoreline)	Amount and Nature of Propagules	Date	Survival	Cause of Los
NONE													

(1) Report agronomic farm crops on Form NR-8
(2) C = Collections and R = Receipts
(3) Use "S" to denote surplus

Total acreage planted:
Marsh and aquatic _____
Hedgerows, cover patches _____
Food strips, food patches _____
Forest plantings _____

Remarks: _____

3-1758
Form NR-8
(Rev. Jan. 1956)

Fish and Wildlife Service Branch of Wildlife Refuges

CULTIVATED CROPS - HAYING - GRAZING

Refuge Swan Lake County Chariton State Missouri

Cultivated Crops Grown	Permittee's Share Harvested		Government's Share or Return				Total Acreage Planted	Green Manure, Cover and Waterfowl Browsing Crops Type and Kind	Total Acreage
			Harvested		Unharvested				
	Acres	Bu./Tons	Acres	Bu./Tons	Acres	Bu./Tons			
								Wheat (br.)	1150
Corn	100	8,000			853	68,000	953	Clover (br.)	325
Milo	18	1,450			241	20,000	259		
Clover	-	-			325	325 Tons	19		
Wheat					1,152	350 Tons	1,152		
								Fallow Ag. Land	

No. of Permittees: Agricultural Operations 3 Haying Operations _____ Grazing Operations _____

Hay - Improved (Specify Kind)	Tons Harvested	Acres	Cash Revenue	GRAZING	Number Animals	AUM'S	Cash Revenue	ACREAGE
				1. Cattle				
				2. Other				
				1. Total Refuge Acreage Under Cultivation				2,687
Hay - Wild				2. Acreage Cultivated as Service Operation				1,784

DIRECTIONS FOR PREPARING FORM NR-8
CULTIVATED CROPS - HAYING - GRAZING

Report Form NR-8 should be prepared on a calendar-year basis for all crops which were planted during the calendar year and for haying and grazing operations carried on during the same period.

Separate reports shall be furnished for Refuge lands in each county when a refuge is located in more than one county or State.

Cultivated Crops Grown - List all crops planted, grown and harvested on the refuge during the reporting period regardless of purpose. Crops in kind which have been planted by more than one permittee or this Service shall be combined for reporting purposes.

Permittee's Share - Only the number of acres utilized by the permittee for his own benefit should be shown under the Acres column, and only the number of bushels of farm crops harvested by the permittee for himself should be shown under the Bushels Harvested column. Report all crops harvested in bushels or fractions thereof except such crops as silage, watermelons, cotton, tobacco, and hay, which should be reported in tons or fractions thereof.

Government's Share or Return - Harvested - Show the acreage and number of bushels harvested for the Government of crops produced by permittees or refuge personnel. Unharvested - Show the exact acreage and the estimated number of bushels of grain available for wildlife. If grazing is made available to waterfowl through the planting of grain, cover, green manure, grazing or hay crops, estimate the tonnage of green food produced or utilized and report under Bushels Unharvested column.

Total Acreage Planted - Report all acreage planted, including crop failures.

Green Manure, Cover and Waterfowl Grazing Crops - Specify the acreage, kind and purpose of the crop. These crops and the acreage may be duplicated under cultivated crops if planted during the year, or a duplication may occur under hay if the crop results from a perennial planting.

Hay - Improved - List separately the kinds of improved hay grown. Annual plantings should also be reported under Cultivated Crops, and perennial hay should be listed in the same manner at time of planting.

Total Refuge Acreage Under Cultivation - Report total land area devoted to agricultural purposes during the year.

INT.-DUP. SEC., WASH., D.C. 91767

3-1570
NR-88
(4/54)

REFUGE GRAIN REPORT

Refuge Swan Lake Months of January through December, 1971

(1) Variety*	(2) On Hand Beginning of Period	(3) Received During Period	(4) Total	(5) Grain Disposed of				(6) On Hand End of Period	(7) Proposed or Suitable Use*		
				Transferred	Seeded	Fed	Total		Seed	Feed	Surplus
Shelled Corn	300	1,105	1,405			1,405	1,405	0			
Wheat	100	1,516	1,616		1,400	100	1,500	16		16	

(8) Indicate shipping or collection points Corn obtained from Squaw Creek Refuge - Wheat obtained from DeSoto Refuge.

(9) Grain is stored at White Barn

(10) Remarks

*See instructions on back.

NR-8a

REFUGE GRAIN REPORT

This report should cover all grain on hand, received, or disposed of, during the period covered by this narrative report.

Report all grain in bushels. For the purpose of this report the following approximate weights of grain shall be considered equivalent to a bushel: Corn (shelled)—55 lb., corn (ear)—70 lb., wheat—60 lb., barley—50 lb., rye—55 lb., oats—30 lb., soy beans—60 lb., millet—50 lb., cowpeas—60 lb., and mixed—50 lb. In computing volume of granaries, multiply the cubic contents (cu. ft.) by 0.8 bushels.

(1) List each type of grain separately and specifically, as flint corn, yellow dent corn, square deal hybrid corn, garnet wheat, red May wheat, durum wheat, spring wheat, proso millet, combine milo, new era cowpeas, mikado soy beans, etc. Mere listing as corn, wheat, and soybeans will not suffice, as specific details are necessary in considering transfer of seed supplies to other refuges. Include only domestic grains; aquatic and other seeds will be listed on NR–9.

(3) Report all grain received during period from all sources, such as transfer, share cropping, or harvest from food patches.

(4) A total of columns 2 and 3.

(6) Column 4 less column 5.

(7) This is a proposed break-down by varieties of grain listed in column 6. Indicate if grain is suitable for seeding new crops.

(8) Nearest railroad station for shipping and receiving.

(9) Where stored on refuge: "Headquarters granary," etc.

(10) Indicate here the source of grain shipped in, destination of grain transferred, data on condition of grain, unusual uses proposed.

INT.-DUP. SEC., WASH., D.C. 17065

3-1979 (NR-12)
(9/63)

Bureau of Sport Fisheries and Wildlife

ANNUAL REPORT OF PERSTICIDE APPLICATION

Refuge: Swan Lake

Proposal Number:

Reporting Year: 1971

INSTRUCTIONS: Wildlife Refuges Manual, secs. 3252d, 3394b and 3395.

Date(s) of Application	List of Target Pest(s)	Location of Area Treated	Total Acres Treated	Chemical(s) Used	Total Amount of Chemical Applied	Application Rate	Carrier and Rate	Method of Application
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
May - June	Giant Foxtail	Cornfields	700	Atrazine	700 Lbs.	1 Lb/Ac	Water 7 Gal/Ac.	Band Spray

10. Summary of results (continue on reverse side, if necessary)

Good results obtained, no detrimental effects noted. Atrazine applied primarily on fields scheduled for continuous corn.

35500

3-1759
Form NR-1
(Rev. March 1953)

WATERFOWL

REFUGE Swan Lake

MONTHS OF September TO December, 19 71

(1) Species	(2) Weeks of reporting period									
	1	2	3	4	5	6	7	8	9	10
	9/5-9/11	9/12-9/18	9/19-25	9/26-10/2	10/3-9	10/10-16	10/17-23	10/24-30	10/31-11/6	11/7-13
Swans:										
Whistling										
Trumpeter										
Geese:										
Canada	200	2,000	7,500	25,000	50,000	85,000	100,000	113,000	111,000	120,000
Cackling										
Brant							100	100	100	100
White-fronted										
Snow /										
Blue			200	100	1,200	16,000	15,000	10,000	18,000	33,000
Other										
Ducks:										
Mallard	1,000	2,000	5,000	2,000	5,000	5,000	7,000	10,000	30,000	40,000
Black										
Gadwall	100	500	500	1,000	2,000	2,000	5,000	5,000	2,000	1,000
Baldpate	500	500	500	3,000	6,000	5,000	10,000	10,000	5,000	3,000
Pintail	500	500	700	5,000	20,000	20,000	30,000	30,000	30,000	35,000
Green-winged teal	500	500	1,000	1,000	5,000	1,000	1,000	1,000	1,000	1,000
Blue-winged teal	5,000	10,000	25,000	2,000	5,000	1,000	1,000	500		
Cinnamon teal										
Shoveler		100	300	500	1,000	500	1,000	300		
Wood	500	1,000	2,000	500	1,000	500	1,000	200		
Redhead										
Ring-necked										
Canvasback										
Scaup										
Goldeneye										
Bufflehead										
Ruddy										
Other										
Coot:	1	1	500	1,500	7,000	4,000	4,000	7,500	10,000	5,000

Int. Dup. Sec., Wash., D.C. 37944

3 -1750a

Cont. MR-1
(Rev. March 1953)

WATERFOWL
(Continuation Sheet)

REFUGE Swan Lake MONTHS OF September TO December, 19 71

(1) Species	(2) Weeks of reporting period: 11	12	13	14	15	16	17	18	(3) Estimated waterfowl days use	(4) Production: Broods seen	Estim tot
Swans:											
Whistling	11/14-20	11/21-27	11/28 - 12/4	12/5-11	12/12-18	12/19-25	12/26-1/1				
Trumpeter											
Geese:											
Canada	128,000	120,000	120,000	100,000	100,000	100,000	100,000		9,671,900		
Cackling											
Brant											
White-fronted	100	100	100						4,900		
Snow / Blue	30,000	25,000	20,000	20,000	10,000	10,000	8,000		1,452,500		
Other											
Ducks:											
Mallard	50,000	75,000	75,000	250,000	150,000	100,000	10,000		5,719,000		
Black											
Gadwall	5,000	5,000	5,000	1,000	1,000				252,700		
Baldpate	4,000	4,000	1,000	1,000	1,000				381,500		
Pintail	30,000	30,000	25,000	25,000	10,000	5,000	1,000		2,083,900		
Green-winged teal	1,000	1,000	1,000	1,000	500				122,500		
Blue-winged teal									346,500		
Cinnamon teal											
Shoveler									25,900		
Wood									46,900		
Redhead				300	100				2,800		
Ring-necked		1,000	1,000	1,000	500				24,500		
Canvasback				100	100				1,400		
Scaup		1,000	1,000	1,000	500				24,500		
Goldeneye											
Bufflehead											
Ruddy											
Other											
C. Merganser				100	100	100	100		2,800		
Coot:	1,000	1,000	1,000						297,514		

(over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans			
Geese	11,129,300	158,000	0
Ducks	9,034,900	280,500	200
Coots	297,514	10,000	0

SUMMARY

Principal feeding areas: Corn and wheat fields for geese moist soil vegetation and milo fields for ducks.

Principal nesting areas: wooded area along creeks

Reported by: Alfred O. Manke

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

(1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.

(2) Weeks of Reporting Period: Estimated average refuge populations.

(3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.

(4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.

(5) Total Days Use: A summary of data recorded under (3).

(6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.

(7) Total Production: A summary of data recorded under (4).

Interior Duplicating Section, Washington, D. C. 37944
1953

3-1751
Form NR-1A
(Nov. 1945)

MIGRATORY BIRDS
(other than waterfowl)

Refuge Swan Lake Months of September to December 1971

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
White Pelican	200	Present	3,000	9/20	2	12/7				5,000
Great Blue Heron	35	Present	35	9/20	3	Present				100
D. C. Cormorant	2	10/5	25	10/21	2	10/29				50
Sora Rail	?	Present	200	9/22	?	10/28				500
Little Blue Heron	1	10/15	1	10/15	1	10/19				1
Pied-billed grebe	20	10/15	50	10/21	2	11/5				200
II. Shorebirds, Gulls and Terns:										
Common Tern			75	9/20						200
Caspien Tern			19	9/20						50
Franklin Gull			500	10/21						1,500
Killdeer			500	9/20						1,000
Avocet	2	9/24	2	9/24-10/30	2	10/30				2
Lesser Yellowlegs			150	9/20						1,000
Ring-billed Gull			25	10/21						200
Wilson Snipe			300	9/20						1,000

(over)

(1)	(2)	(3)		(4)	(5)	(6)
III. Doves and Pigeons:						
Mourning dove	Resident	2,500	9/20	Resident		5,000
White-winged dove						
IV. Predaceous Birds:						
Golden eagle						
Duck hawk						
Horned owl	Resident	3	12/10			50
Magpie						
Raven						
Crow	Resident	100	12/10	Present		500
Bald Eagle	3 10/4	60	12/17	Present		75
Red-tailed Hawk	Resident	150	12/17	Present		200
Marsh Hawk		25	12/17	Present		100
Rough-legged Hawk		25	10/21	Present		200
Sparrow Hawk	Resident	12	10/21			100

Reported by Alfred O. Manke

INSTRUCTIONS

(1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiiformes)
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)

(2) First Seen: The first refuge record for the species for the season concerned.

(3) Peak Numbers: The greatest number of the species present in a limited interval of time.

(4) Last Seen: The last refuge record for the species during the season concerned.

(5) Production: Estimated number of young produced based on observations and actual counts.

(6) Total: Estimated total number of the species using the refuge during the period concerned.

INT.-DUP. SEC., WASH., D.C.

59317

3-1750b
Form NR-1B
(Rev. Nov. 1957)

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
BUREAU OF SPORT FISHERIES AND WILDLIFE

WATERFOWL UTILIZATION OF REFUGE HABITAT

Refuge Swan Lake For 12-month period ending August 31, 19 71

Reported by Alfred O. Manke Title Refuge Manager

(1) Area or Unit Designation	(2) Habitat Type	Habitat Acreage		(3) Use-days	(4) Breeding Population	(5) Production
I	Crops	700	Ducks	1,800,000	0	0
	Upland	200	Geese	6,000,000	0	0
Swan Lake	Marsh	300	Swans	0	0	0
	Water	600	Coots	200,000	0	0
	Total	1,800	Total	8,000,000	0	0
II	Crops	670	Ducks	1,500,000	40	100
	Upland	1,000	Geese	4,000,000	0	0
Silver Lake	Marsh	530	Swans	0	0	0
	Water	1,800	Coots	500,000	0	0
	Total	4,000	Total	6,000,000	40	100
III	Crops	830	Ducks	3,500,000	60	200
	Upland	300	Geese	5,500,000	0	0
South Lake	Marsh	1,570	Swans	0	0	0
	Water	300	Coots	400,000	0	0
	Total	3,000	Total	9,400,000	60	200
IV	Crops	400	Ducks	395,650	100	200
	Upland	1,650	Geese	222,910	0	0
River Bottoms	Marsh	20	Swans	0	0	0
	Water	30	Coots	8,677	0	0
	Total	2,100	Total	627,227	100	200
	Crops	2,600	Ducks	7,195,650	200	500
	Upland	3,150	Geese	15,722,910	0	0
TOTALS	Marsh	2,420	Swans	0	0	0
	Water	2,730	Coots	1,108,667	0	0
	Total	10,900	Total	24,027,227	200	500
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			

(over)

3-1750c
Form NR-1C
(Sept. 1960)

WATERFOWL HUNTER KILL SURVEY

Refuge Swan Lake Year 1961

(1) Weeks of Hunting	(2) No. Hunters Checked	(3) Hunter Hours	(4) Waterfowl Species and Nos. of Each Bagged	(5) Total Bagged	(6) Crippling Loss	(7) Total Kill	(8) Est. No. of Hunters	(9) Est. Total Kill
10/31 - 11/6	1,455	7,000	Canada goose, B & S geese, W. F. Goose	1,197	100	1,297	1,455	1,297
11/7 - 11/13	1,331	7,000	" " " "	817	73	890	1,331	890
Totals	2,786	14,000	" " " "	2,014	173*	2,187	2,786	2,187

Canada geese Harvested 1,953
B & S geese Harvested 56
White-fronted geese Harvested 5
Total 2,014

*Cripple-loss based on hunter reports, probably about twice as many.

(over)

INSTRUCTIONS

(1) The first week of hunting begins with opening day and ends at the close of hunting 6 days later. Successive weeks follow the same pattern.

(2) The goal is to survey a minimum of 25 percent of refuge hunters each week and to record data only from those who have completed their day's hunting. This information should be collected during each day of the week and in each area hunted in relative proportion to the hunter effort expended. When the 25 percent goal cannot be achieved, particular care should be taken to collect representative data.

(3) Record the total number of hours the hunters spent hunting on the refuge.

(4) List waterfowl species in decreasing order of numbers bagged. Sample entry: Mallard (61), Pintail (36), Redhead (16), Gadwall (11), Widgeon (6), Coot (4), Canada Goose (3), Green-winged Teal (1).

(5) Record total numbers of waterfowl bagged.

(6) Record total numbers of waterfowl reported knocked down but not recovered.

(7) Total of Columns 5 and 6.

(8) Estimate the total number of hunters who hunted on the refuge during the week, including hunters checked (Column 2).

(9) Kill sample projected to 100 percent. Column 9 = $\frac{\text{Column 8}}{\text{Column 2}}$ x Column 7.

3-1752
Form NR-2
(April 1946)

UPLAND GAME BIRDS

Refuge **Swan Lake** Months of **September** to **December**, 19**71**

(1) Species	(2) Density	(3) Young Produced			(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres Per Bird	Number broods observed	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Bobwhite Quail	**Cropland 3,000 Upland med. 500 Mixed Timber 2,500**	**10**	**0**	**600**	**50% - 50%**	**-**	**-**	**-**	**600**	**Poor interspersion of cover types, and much of habitat subject to flooding.**
Greater Prairie Chicken	**Upland Meadow with some native grasses 500**	**50**	**0**	**10**	**?**	**-**	**-**	**-**	**10**	**Reintroduction of 19 in Feb 1971. No sightings since June.**

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS*

(1) SPECIES: Use correct common name.

(2) DENSITY: Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.

(4) SEX RATIO: This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.

(5) REMOVALS: Indicate total number in each category removed during the report period.

(6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.

(7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

*Only columns applicable to the period covered should be used.

3-1753
Form NR-3
(June 1945)

BIG GAME

Refuge Swan Lake Calendar Year 1971

(1) Species	(2) Density	(3) Young Produced	(4) Removals				(5) Losses			(6) Introductions		(7) Estimated Total Refuge Population		(8) Sex Ratio
Common Name	Cover types, total Acreage of Habitat	Number	Hunting	For Re-stocking	Sold	For Research	Predation	Disease	Winter Loss	Number	Source	At period of Greatest use	As of Dec. 31	
White-tailed Deer	Bottom-land Timber and cropland. 5,000 Ac.	200	-	-	-	-	-	-	-	-	-	500	350	

Remarks: Estimated 25 road-kills during year. Estimated 75 of "refuge herd" removed by hunters off-refuge. Floods "push" deer off refuge.

Reported by Alfred O. Manke

INSTRUCTIONS

Form NR-3 - BIG GAME

(1) SPECIES: Use correct common name; i.e., Mule deer, black-tailed deer, white-tailed deer. It is unnecessary to indicate sub-species such as northern or Louisiana white-tailed deer.

(2) DENSITY: Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge: once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) YOUNG PRODUCED: Estimated total number of young produced on refuge.

(4) REMOVALS: Indicate total number in each category removed during the year.

(5) LOSSES: On the basis of known records or reliable estimates indicate total losses in each category during the year.

(6) INTRODUCTIONS: Indicate the number and refuge or agency from which stock was secured.

(7) TOTAL REFUGE POPULATION: Give the estimated population of <u>each species</u> on the refuge at period of its greatest abundance and also as of Dec. 31.

(8) SEX RATIO: Indicate the percentage of males and females of each species as determined from field observations or through removals.

3-1754
Form NR-4
(June 1945)

SMALL MAMMALS

Refuge Swan Lake Year ending April 30, 1971

(1) Species	(2) Density		(3) Removals					(4) Disposition of Furs						(5)
								Share Trapping						
Common Name	Cover Types & Total Acreage of Habitat	Acres Per Animal	Hunting	Fur Harvest	Predator Control *	For Re-stocking	For Re-search	Permit Number	Trappers Share	Refuge share	Total Refuge Furs Shipped	Furs Donated	Furs Destroyed	Total Population
Racoon														500
Muskrat														300
Coyote														15
Beaver														20
Red Fox														5
Grey Fox														5
Mink														30
Fox Squirrel														2,000
Grey Squirrel														1,000
Cottontail														1,000
Opossum														300
Striped Skunk														50
Woodchuck														100
Franklin's Ground Squirrel														50

* List removals by Predator Animal Hunter

REMARKS:

Reported by Robert P. Timmerman

3-1755
Form NR-5

DISEASE

Refuge Swan Lake Year 19 72

Botulism - NONE

Lead Poisoning or other Disease - NONE

Period of outbreak _____

Period of heaviest losses _____

Losses:

	Actual Count	Estimated
(a) Waterfowl		
(b) Shorebirds		
(c) Other		

Number Hospitalized	No. Recovered	% Recovered
(a) Waterfowl		
(b) Shorebirds		
(c) Other		

Areas affected (location and approximate acreage) _____

Water conditions (average depth of water in sickness areas, reflooding of exposed flats, etc.

Condition of vegetation and invertebrate life _____

Remarks _____

Kind of disease _____

Species affected _____

Number Affected Species	Actual Count	Estimated

Number Recovered _____

Number lost _____

Source of infection _____

Water conditions _____

Food conditions _____

Remarks _____

INT.-DUP., D.C.- 53319-8

(1)

3-1757
Form NR-7
(Rev. June 1960)

NONAGRICULTURAL COLLECTIONS, RECEIPTS, AND PLANTINGS

Refuge **Swan Lake** Year 19**72**

	Collections and Receipts (Seeds, rootstocks, trees, shrubs)						Plantings (Marsh - Aquatic - Upland)						
Species	Amount (Lbs., bus., etc.)	(2) C or R	Date	Method or Source	Cost	(3) Total Amount on Hand	Location of Area Planted	Rate of Seeding or Planting	Amount Planted (Acres or Yards of Shoreline)	Amount and Nature of Propagules	Date	Survival	Cause of Loss
NONE													

(1) Report agronomic farm crops on Form NR-8
(2) C = Collections and R = Receipts
(3) Use "S" to denote surplus

Total acreage planted:
Marsh and aquatic _____
Hedgerows, cover patches _____
Food strips, food patches _____
Forest plantings _____

Remarks: _____

3-1758
Form NR-8
(Rev. Jan. 1956)

Fish and Wildlife Service Branch of Wildlife Refuges

CULTIVATED CROPS - HAYING - GRAZING

Refuge Swan Lake County Chariton State Missouri

Cultivated Crops Grown	Permittee's Share Harvested		Government's Share or Return				Total Acreage Planted	Green Manure, Cover and Waterfowl Browsing Crops Type and Kind	Total Acreage
			Harvested		Unharvested				
	Acres	Bu./Tons	Acres	Bu./Tons	Acres	Bu./Tons			
								Wheat (br.)	1150
Corn	100	8,000			853	68,000	953	Clover (br.)	325
Milo	18	1,450			241	20,000	259		1475
Clover	-	-			325	325 Tons	19		
Wheat					1,152	350 Tons	1,152		
							2383		
								Fallow Ag. Land	

No. of Permittees: Agricultural Operations 3 Haying Operations ____ Grazing Operations ____

Hay - Improved (Specify Kind)	Tons Harvested	Acres	Cash Revenue	GRAZING	Number Animals	AUM'S	Cash Revenue	ACREAGE
				1. Cattle				
				2. Other				
				1. Total Refuge Acreage Under Cultivation				2,687
Hay - Wild				2. Acreage Cultivated as Service Operation				1,784

DIRECTIONS FOR PREPARING FORM NR-8
CULTIVATED CROPS - HAYING - GRAZING

Report Form NR-8 should be prepared on a calendar-year basis for all crops which were planted during the calendar year and for haying and grazing operations carried on during the same period.

Separate reports shall be furnished for Refuge lands in each county when a refuge is located in more than one county or State.

Cultivated Crops Grown - List all crops planted, grown and harvested on the refuge during the reporting period regardless of purpose. Crops in kind which have been planted by more than one permittee or this Service shall be combined for reporting purposes.

Permittee's Share - Only the number of acres utilized by the permittee for his own benefit should be shown under the Acres column, and only the number of bushels of farm crops harvested by the permittee for himself should be shown under the Bushels Harvested column. Report all crops harvested in bushels or fractions thereof except such crops as silage, watermelons, cotton, tobacco, and hay, which should be reported in tons or fractions thereof.

Government's Share or Return - Harvested - Show the acreage and number of bushels harvested for the Government of crops produced by permittees or refuge personnel. Unharvested - Show the exact acreage and the estimated number of bushels of grain available for wildlife. If grazing is made available to waterfowl through the planting of grain, cover, green manure, grazing or hay crops, estimate the tonnage of green food produced or utilized and report under Bushels Unharvested column.

Total Acreage Planted - Report all acreage planted, including crop failures.

Green Manure, Cover and Waterfowl Grazing Crops - Specify the acreage, kind and purpose of the crop. These crops and the acreage may be duplicated under cultivated crops if planted during the year, or a duplication may occur under hay if the crop results from a perennial planting.

Hay - Improved - List separately the kinds of improved hay grown. Annual plantings should also be reported under Cultivated Crops, and perennial hay should be listed in the same manner at time of planting.

Total Refuge Acreage Under Cultivation - Report total land area devoted to agricultural purposes during the year.

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3-1570
RP-8a
(4/54)

REFUGE GRAIN REPORT

Refuge Swan Lake Months of January through December, 1971

(1) Variety*	(2) On Hand Beginning of Period	(3) Received During Period	(4) Total	(5) Grain Disposed of				(6) On Hand End of Period	(7) Proposed or Suitable Use*		
				Transferred	Seeded	Fed	Total		Seed	Feed	Surplus
Shelled Corn	300	1,105	1,405			1,405	1,405	0			
Wheat	100	1,516	1,616		1,400	100	1,500	16		16	

(8) Indicate shipping or collection points Corn obtained from Squaw Creek Refuge - Wheat obtained from DeSoto Refuge.

(9) Grain is stored at White Barn

(10) Remarks

*See instructions on back.

NR-8a

REFUGE GRAIN REPORT

This report should cover all grain on hand, received, or disposed of, during the period covered by this narrative report.

Report all grain in bushels. For the purpose of this report the following approximate weights of grain shall be considered equivalent to a bushel: Corn (shelled)—55 lb., corn (ear)—70 lb., wheat—60 lb., barley—50 lb., rye—55 lb., oats—30 lb., soy beans—60 lb., millet—50 lb., cowpeas—60 lb., and mixed—50 lb. In computing volume of granaries, multiply the cubic contents (cu. ft.) by 0.8 bushels.

(1) List each type of grain separately and specifically, as flint corn, yellow dent corn, square deal hybrid corn, garnet wheat, red May wheat, durum wheat, spring wheat, proso millet, combine milo, new era cowpeas, mikado soy beans, etc. Mere listing as corn, wheat, and soybeans will not suffice, as specific details are necessary in considering transfer of seed supplies to other refuges. Include only domestic grains; aquatic and other seeds will be listed on NR–9.

(3) Report all grain received during period from all sources, such as transfer, share cropping, or harvest from food patches.

(4) A total of columns 2 and 3.

(6) Column 4 less column 5.

(7) This is a proposed break-down by varieties of grain listed in column 6. Indicate if grain is suitable for seeding new crops.

(8) Nearest railroad station for shipping and receiving.

(9) Where stored on refuge: "Headquarters granary," etc.

(10) Indicate here the source of grain shipped in, destination of grain transferred, data on condition of grain, unusual uses proposed.

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